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Vol. XIII, No. 5 MAY, 1924

# JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

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**THE SEVENTY-SECOND ANNUAL CONVENTION OF THE AMERICAN PHARMACEUTICAL ASSOCIATION WILL BE HELD IN BUFFALO, N. Y., DURING THE WEEK OF AUGUST 25TH.**

**The 1924 meetings of the American Conference of Pharmaceutical Faculties and the National Association of Boards of Pharmacy will also be held in Buffalo, during the week of August 25th.**

For Association Roster see pages x, xii, xiv and xvi.

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NEWARK, N. J.

President-Elect of American Pharmaceutical Association 1924–1925

CHARLES W. HOLTON.

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. XIII MAY, 1924 No. 5

## CHARLES WILLIAM HOLTON.

In presenting a brief sketch of President-Elect Charles W. Holton it is interesting to note his close relationship to three of our former A. Ph. A. presidents. His revered father died during his term of office and was succeeded, as president, by A. R. L. Dohme, son of the late Charles E. Dohme who rendered distinguished services in the same capacity during 1898–1899. Complementing these honors, the state of New Jersey records other distinctions which have been attained by her eminent pharmacists—the president and president-elect of the American Pharmaceutical Association are citizens of this sovereignty. Three of the five Remington Honor Medalists are of this state and all of them hold membership in the New Jersey Pharmaceutical Association.

The president-elect was born in Newark, November 1882; here he received his early education and was graduated from Newark Academy in 1900. At Princeton he earned the A.B. degree and then matriculated at New York College of Pharmacy. After completing the two-year course (Ph.G.) he continued his studies and received the Ph.C. degree. Thereafter Charles was engaged in the store of his father, who insisted that he start at the bottom and profit by experience, rather than by preference.

The business of which the subject of this sketch is secretary and treasurer was incorporated several years prior to his father's death. Pharmacy and the drug business in general have had a fascination for him since boyhood; he attended many of the conventions of the American Pharmaceutical Association with his parents, the first one in New Orleans, in 1891; he became a member of the Association in 1907. Mr. Holton is an Association worker; he realizes the benefits to be derived from attendance at Association meetings—by giving service, profiting by the presentation and discussion of papers and Association affairs and matters relating to the drug business in its different relations, and through contact with others who attend the conventions—there is always the call to duty, as well as the pleasure of meeting friends and making new acquaintances. Mr. Holton was president of the New Jersey Pharmaceutical Association in 1914, and he has served during several years as secretary of the New York College of Pharmacy. He is on the directorate of several Newark enterprises and holds membership in a number of clubs. He is president of the board of trustees of High Street Presbyterian Church.

In 1907 Mr. Holton was married to Miss Louise Dohme, daughter of Charles E. Dohme; two boys and three girls enliven the family circle and have added to the happiness of the parents; they reside in a suburb of Newark—Essex Fells. Prior to the death of her husband the mother of our president-elect was a regular attendant at the annual meetings of the A. Ph. A.; she enters into the joy of her children's home life and has the mother's interest in her son's preferment. E. G. E.

# EDITORIAL

E. G. EBERLE, EDITOR 253 Bourse Bldg., PHILADELPHIA

## THE HOME FOR AMERICAN PHARMACY.

ALL who are proud of their present or past connection with American Pharmacy must have learned with keen satisfaction of the comprehensive plans for a building dedicated to its interests.

The sentiment expressed for its establishment, as reported in the April issue, the Headquarters Building Number of the JOURNAL, appears widespread; the progress already made by the Campaign Committee is splendid and reassuring; the guarded discussion as to the most desirable, if not most sensible, location, for this Pharmacy Building suggests an outcome which should be pleasing to all.

Except for one point, the writer has nothing to add to the comments made by the men and women leading in this movement. Reference is made by Mr. Hunsberger in the last issue of this JOURNAL to the new Headquarters Building of the Philadelphia Association of Retail Druggists. The further fact might be emphasized with advantage that our colleagues of other nations, where pharmacy has attained a high standing, already have a home, suggestive of the one needed for American Pharmacy. The headquarters for English and German Pharmacy, for instance, have long been established and are permanently located in the respective capitals of these nations.

Especially valuable to us is the English example. As early as 1841, at the first annual meeting of the British Pharmaceutical Society, the Council reported as follows on pages 634 and 635 of the first volume of the Society's official organ, the *Pharmaceutical Journal:*

"After having been engaged in circulating information, collecting funds, and other preliminary arrangements, the Council succeeded, at the commencement of the present year, in taking a house on advantageous terms, and in complete repair, situated in Bloomsbury Square, which has been found well calculated to carry on the business of the Society at present and which, in all probability, it will be desirable to retain as the establishment of the Society for some time to come. It has been furnished to an extent consistent with convenience and economy, and is inhabited by the Secretary."

The number who supported the movement in the first year were less than 1000 members and associates. They provided for the publication of a journal, for a library, a museum, for a Benevolent Fund and even for a School of Pharmacy. At the end of the second year we find close to 2000 members and associates and read that the library and museum had registered a remarkable progress. Subsequent years have brought steady growth and increased influence to the British Society. Their old home, so beautifully and centrally located on Bloomsbury Square, London, has been materially enlarged; the journal, recognized as the oldest and most influential weekly newspaper for pharmacists and the drug trade generally in Great Britain, has by far the largest circulation of any British drug trade paper; the museum, thanks to the efforts of men like Hanbury or of Holmes, the eminent curator, represents an unusually wealthy and valuable collection; the research laboratory under the able leadership of Dr. H. G. Greenish has now a worldwide reputation. Less

than a year ago both the International Congress of Pharmacy and the British Pharmaceutical Conference met at these headquarters—British Headquarters.

Surely, we, the multitude, having any interest at all in advancing our calling, can afford to follow the example of a mere 934 loyal English pharmacists of 83 years ago—and erect a building, adequate for its varied purposes and worthy of a shrine for United American Pharmacy.

The test, what you and I can do, is on—all shoulders to the wheel!

ARNO VIEHOEVER.

---

## WHY AN AMERICAN PHARMACY BUILDING IS NEEDED.

ONE of the attributes of man is a desire to express his emotions, his achievements, or his experiences in some form of structure. So fundamental and basic is this among all races and peoples that we scarcely recognize it any more than we do the pervasiveness of the air we breathe.

On every hand we see evidence of this trait of the human race. We glorify great victories by erecting statues in our public parks. Individuals erect marble columns over the last resting place of their beloved. Artists sculpture in marble or cast in bronze symbolic figures as an expression of their emotions or to commemorate some great event. Religious orders thrust toward heaven the spires of great cathedrals in adoration of the Deity. Commercial bodies erect mammoth buildings as a symbol of their virility or as a record of their achievement.

Many of these have a utilitarian as well as an aesthetic value and it seems therefore not only appropriate but essential that pharmacy should erect a structure that will serve to identify it with the part it holds and is playing in the record of civilization. The alleviation of human suffering and the elimination of disease in which pharmacy has been such an important factor demands, it seems to me, some sort of physical expression as a record of achievement and as an inspiration to the pharmacists of the future.

Nor need such a structure be divorced from utilitarian motives. Considering the activities of pharmacy to-day and the probable course of activities in the future it seems to me that it is not only appropriate but quite essential that a building which would be symbolic of our history, and practical for our every-day use, be erected.

At present pharmacy is a very much scattered profession. We have innumerable organizations—state and national. While it is probable that only national organizations could avail themselves of the services of such a building, these organizations if centralized could coöperate far more efficiently with state and municipal bodies. With such organizations as the National Association of Boards of Pharmacy, the AMERICAN PHARMACEUTICAL ASSOCIATION, the National Association of Retail Druggists, the American Conference of Pharmaceutical Faculties, the American Association of Pharmaceutical Chemists, the American Drug Manufacturers' Association, the National Wholesale Druggists' Association, the Proprietary Association of America, etc., all housed in one building—having a permanent home and permanent address—would not only facilitate the transaction of business, but would lend dignity and add prestige to our profession.

As Americans we admire success. We admire the outward symbols of success

—not so much so, perhaps, for the actual money represented but as a symbol of human achievement. The Brotherhood of Locomotive Engineers maintains a bank in Cleveland. It is a very successful bank. However, apart from the direct material advantage to the members, I am confident that people at large have more respect and admiration for this engineers' organization than if it had no bank and its members utilized the financial institutions of their respective communities. Or, if we examine a little further, compare the prestige of a fraternal organization —Masons, Elks, Knights of Columbus, etc.—having their own building, with those hiring a hall or leased quarters.

The advantages of a headquarters building are too numerous to be listed; various pharmaceutical writers have enumerated them by the score; a few stand out prominently. This building could be used as a museum for the storage of specimens, apparatus, or preparations which it is desirable to preserve for historical or scientific purposes. Its library could contain a complete historical record of the development of pharmacy. There are now, without doubt, in private collections or in the hands of individuals, letters, pamphlets, books and publications—old or recent—which would be gladly donated to be housed in a building of this kind which would serve to tell the story of American Pharmacy from the beginning. Some of these are priceless and yet with the death of the owner may become permanently lost to pharmacy unless some means is provided for their acceptance and preservation.

There could and should be laboratories endowed for solving research problems which would be of permanent benefit. Heretofore, men have been prone to go to Europe to carry on advanced study in various branches of pharmacy. The world conditions are peculiarly opportune to bring this center of study to the United States. A little enterprise, a little aggressiveness, a little typical American "hustle" can easily make this an accomplished fact.

Another point stands out prominently, *viz.*, the advantage of immediate communication made possible by a common headquarters. More valuable work could be done if the interested parties had merely to step across the hall to consult the man or men they wish to see, instead of waiting, as is now frequently the case, for a letter to cross the country and a reply to be sent over the same distance. Everyone experienced in state and national meetings knows how easy it is to accomplish something when the men interested are on the spot and how difficult it is to complete the same undertaking by correspondence. Furthermore, with the work of the various divisions of pharmacy centralized, many new enterprises, not now even thought of, would be consummated. America has the men, it has the money, it has the brains, it has the enterprise and the energy to make America the world's center for pharmaceutical products. To accomplish this, coöperation is necessary. Coöperation among the manufacturers, wholesalers, retailers, boards of pharmacy, schools of pharmacy, the research men, the investigators, the men who sell and the men who finance. As a first step to coöperation, these various units must be gathered under one roof. This roof must be and should be the "American Pharmacy Building." We have the men, we have the money, all we need to do is to get together and pull for it—now all together—"LET'S GO!"

H. C. CHRISTENSEN, *Secretary National Association of Boards of Pharmacy*

# THE NATURAL PLANT COLORING MATTERS.

BY JOHN H. WURDACK.

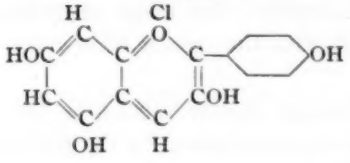
(*Continued from p. 315, April issue.*)

## THE ANTHOCYANINS.

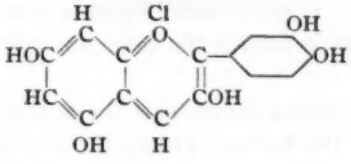
Anthocyanins are the red, violet, and blue coloring matters of flowers, many fruits, and some leaves. They are glucosidal, containing the sugars dextrose, rhamnose, or galactose, or combinations of these. They combine with acids or alkalies; indeed, the color depends on, and is an indicator of the reaction of, the cell sap: If it is acid in character we find the anthocyanin combined with a plant acid (malic, tartaric, citric, etc.) as a red or reddish pigment; if it is neutral the anthocyanin is free as a violet coloring matter; if it is alkaline the anthocyanin is found as a salt having a blue color. In some plants they are not only dissolved in the cell sap, but are also separated out as crystals or amorphous granules, separation occurring when the concentration becomes too high through loss of water during dry periods or through excessive accumulation of coloring matter.

On hydrolysis they are broken up into sugars and the corresponding coloring matters proper known as **anthocyanidins** which possess the same colors as the anthocyanins but are rarely found in plants. In some cases other hydrolytic products also appear, such as para-hydroxybenzoic acid or malonic acid. The parent anthocyanidins are **pelargonidin, cyanidin,** and **delphinidin,** whose chlorides have the following formulas:

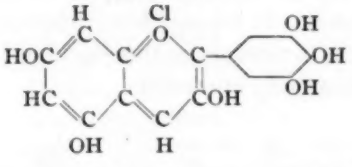
Pelargonidin Chloride



Cyanidin Chloride



Delphinidin Chloride



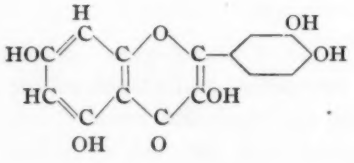
In addition there are a number of homologues: **peonidin** being cyanidin monomethyl ether; **myrtillidin, petunidin,** and **ampelopsidin** being delphinidin monomethyl ethers; and **oenidin** and **malvidin** being delphinidin dimethyl ethers.

The above three formulas show the anthocyanidins united with hydrochloric acid as red colored products in which form they are most commonly obtained for examination; in the plant the red colors are instead united with organic acids, and carbohydrate groups are generally attached to the molecules, forming the glucosides. It will be observed that they are oxonium compounds containing the basic tetravalent oxygen. By replacing the chlorine with the hydroxyl group on neutralization with caustic alkalies, water simultaneously splitting off, the neutral violet color is produced as illustrated in the following hypothetical formulation:

Treatment with alkali results in the conversion of the neutral violet compounds to blue metallic salts by reaction upon the phenolic hydroxyl groups without disturbing the oxonium structure. Of course, treatment with acids results in the reverse changes, blue to violet to red. It will be noted that these color changes of the anthocyanidins (and anthocyanins, which react in the same manner) are the same as those with litmus.

The anthocyanins and the anthocyanidins in neutral or more so in alkaline solution lose their color by changing to pseudo-bases, which probably explains the loss of color in flowers; on acidulation the color returns. In the absence of excess acid the red anthocyanins (combined with acid) will also decolorize if the solution is dilute. The colorless pseudo-bases turn intensely yellow with alkali thus resembling those flavone derivatives which in neutral or acid solution are almost colorless, this fact being suggestive in growing white and yellow flowers. To illustrate the effect just described: Extract a red rose with aqueous alcohol and add caustic soda to the filtered liquid; it will turn intensely green, the green being a blend of the blue cyanin compound with the yellow produced by the action of the alkali upon the pseudo-base formed from part of the cyanin by the presence of water. If the filtered liquid is first acidified with a few drops of hydrochloric acid, there is formed the color salt only, which with the caustic soda gives a pure blue.

The anthocyanins and the anthocyanidins are closely related to the yellow colors of the flavonol group, the anthocyanins corresponding to the flavonol glucosides, and the anthocyanidins to the flavonols themselves; so far, none have been isolated corresponding to the flavones, but, in all likelihood, such will be found—the field is far from exhausted. It is possible to produce anthocyanins by reducing flavonol glucosides, and also to produce anthocyanidins in similar manner from the sugar-free flavonols; for instance, quercetin,



by treatment with magnesium and acid in the presence of mercury at 35° C. is converted to cyanidin; myricetin with magnesium powder and glacial acetic acid gives a green residue of a complex organo-magnesium derivative which with alcoholic hydrochloric acid yields delphinidin chloride.

The anthocyanins isolated by Willstätter and his co-workers from red, violet and blue flowers and fruits are as follows:

**Pelargonin, callistephin, salvianin,** all glucosides of pelargonidin;
**Cyanin, idaein, chrysanthemin, asterin, keracyanin, prunicyanin, mecocyanin,** all glucosides of cyanidin;
**Peonin,** a glucoside of peonidin;
**Delphinin, violanin,** both glucosides of delphinidin;
**Oenin,** a glucoside of oenidin;
**Malvin,** a glucoside of malvidin;
**Myrtillin, althaein,** both glucosides of myrtillidin;
**Petunin,** a glucoside of petunidin;
**Ampelopsin,** a glucoside of ampelopsidin.

The following tabulation of the anthocyanins and the results of their complete hydrolysis by boiling with (usually 20%) hydrochloric acid is interesting. By incomplete hydrolysis some of the diglucosides yield intermediate monoglucosides which are not mentioned here. In a few instances the information is incomplete because of the war conditions under which Willstätter and his coworkers accomplished part of the work:

**Pelargonidin Group.**

| | | | | |
|---|---|---|---|---|
| $C_{27}H_{31}O_{15}Cl + 2H_2O =$ | $C_{15}H_{11}O_5Cl +$ | $2C_6H_{12}O_6$ | | |
| Pelargonin Chloride | Pelargonidin Chloride | Dextrose | | |
| $C_{21}H_{21}O_{10}Cl + H_2O =$ | $C_{15}H_{11}O_5Cl +$ | $C_6H_{12}O_6$ | | |
| Callistephin Chloride | Pelargonidin Chloride | Dextrose | | |
| ??? $+ xH_2O =$ | $C_{15}H_{11}O_5Cl +$ | $2C_6H_{12}O_6 +$ | $CH_2(COOH)_2$ | |
| Salvianin Chloride | Pelargonidin Chloride | Dextrose | Malonic acid in considerable amount | |

**Cyanidin Group.**

| | | | | |
|---|---|---|---|---|
| $C_{27}H_{31}O_{16}Cl + 2H_2O =$ | $C_{15}H_{11}O_6Cl +$ | $2C_6H_{12}O_6$ | | |
| Cyanin Chloride | Cyanidin Chloride | Dextrose | | |
| $C_{21}H_{21}O_{11}Cl + H_2O =$ | $C_{15}H_{11}O_6Cl +$ | $C_6H_{12}O_6$ | | |
| Idaein Chloride | Cyanidin Chloride | Galactose | | |
| $C_{21}H_{21}O_{11}Cl + H_2O =$ | $C_{15}H_{11}O_6Cl +$ | $C_6H_{12}O_6$ | | |
| Chrysanthemin Chloride | Cyanidin Chloride | Dextrose | | |
| $C_{21}H_{21}O_{11}Cl + H_2O =$ | $C_{15}H_{11}O_6Cl +$ | $C_6H_{12}O_6$ | | |
| Asterin Chloride | Cyanidin Chloride | Dextrose | | |
| $C_{27}H_{31}O_{15}Cl + 2H_2O =$ | $C_{15}H_{11}O_6Cl +$ | $C_6H_{12}O_6 +$ | $C_6H_{12}O_5$ | |
| Keracyanin Chloride | Cyanidin Chloride | Dextrose | Rhamnose | |
| $C_{27}H_{31}O_{15}Cl + 2H_2O =$ | $C_{15}H_{11}O_6Cl +$ | $C_6H_{12}O_6 +$ | $C_6H_{12}O_5$ | |
| Prunicyanin Chloride | Cyanidin Chloride | A hexose | Rhamnose | |
| $C_{27}H_{31}O_{16}Cl + 2H_2O =$ | $C_{15}H_{11}O_6Cl +$ | $2C_6H_{12}O_6$ | | |
| Mecocyanin Chloride | Cyanidin Chloride | Dextrose | | |
| $C_{28}H_{33}O_{16}Cl + 2H_2O =$ | $C_{16}H_{13}O_6Cl +$ | $2C_6H_{12}O_6$ | | |
| Peonin Chloride | Peonidin Chloride | Dextrose | | |

**Delphinidin Group.**

$C_{41}H_{39}O_{21}Cl + 4H_2O = C_{15}H_{11}O_7Cl + 2C_6H_{12}O_6 + 2C_6H_4OH.COOH$
Delphinin Chloride = Delphinidin Chloride + Dextrose + Para-hydroxybenzoic Acid

??? $+ 2H_2O = C_{15}H_{11}O_7Cl + C_6H_{12}O_6 + C_6H_{12}O_5$
Violanin Chloride = Delphinidin Chloride + Dextrose + Rhamnose
(not in molar amounts)

$C_{23}H_{25}O_{12}Cl + H_2O = C_{17}H_{15}O_7Cl + C_6H_{12}O_6$
Oenin Chloride = Oenidin** Chloride + Dextrose

$C_{29}H_{35}O_{17}Cl + 2H_2O = C_{17}H_{15}O_7Cl + 2C_6H_{12}O_6$
Malvin Chloride = Malvidin** Chloride + Dextrose

$C_{22}H_{23}O_{12}Cl + H_2O = C_{16}H_{13}O_7Cl + C_6H_{12}O_6$
Myrtillin Chloride = Myrtillidin* Chloride + Galactose

$C_{22}H_{23}O_{12}Cl + H_2O = C_{16}H_{13}O_7Cl + C_6H_{12}O_6$
Althaein Chloride = Myrtillidin* Chloride + ??

$C_{28}H_{33}O_{17}Cl + 2H_2O = C_{16}H_{13}O_7Cl + 2C_6H_{12}O_6$
Petunin Chloride = Petunidin* Chloride + Dextrose

$C_{22}H_{23}O_{12}Cl + H_2O = C_{16}H_{13}O_7Cl + C_6H_{12}O_6$
Ampelopsin Chloride = Ampelopsidin* Chloride + Dextrose

* Monomethyl ethers
** Dimethyl ethers

Variation of color in flowers or other plant structures is due to one or several of the following causes:

1. Several different anthocyanins occurring in one plant or even one blossom, the various anthocyanins differing more or less in tint depending on the absence or presence of one or more methyl groups and upon the nature, number and method of union of the sugar molecules.

2. Difference in percentage amount, concentrated solutions differing from weaker ones not only in depth of shade but often also in tint.

3. Difference in reaction of the cell sap. In general, the anthocyanins are all blue in an alkaline cell sap, violet when neutral, and some shade of red when the reaction is acid; for instance, the blue of the cornflower is due to the potassium salt of cyanin (cyanin combined with the alkali potash), the violet of the larkspur is caused by the neutral form of delphinin, and the scarlet of the pelargonium depends on the tartrate of pelargonin (pelargonin combined with tartaric acid).

4. Admixture with yellow pigments.

The following list gives the anthocyanin content of various flowers and fruits based on dried material. A careful study of the list yields much interesting information.

Cornflower (*Centaurea cyanus*):
Blue of fields, 0.65–0.70% cyanin.
Rose-colored of fields, 3.75% pelargonin.
Dark purplish red, cultivated, 13–14% cyanin.

Rose:

White and yellow, hardly any anthocyanin.

Pink, a little cyanin.

Dark red, 2% cyanin combined with acid.

Orange, Salmon-colored } , cyanin with carotin and a flavon glucoside.

Pansy:

Deep brown parts, anthocyanins with yellow pigments.

Deep yellow parts, 25% violaquercitrin and 0.6% carotin which latter is the chief source of color.

Deep bluish violet flowers, not less than 33% violanin.

Pelargonium:

Scarlet *P. zonale*, var. "Meteor," 6.6–7.1% pelargonin; up to 14.1% in old blossoms.

Violet-red var. of *P. zonale*, 2.8% of a mixture of chiefly cyanin and a little pelargonin.

Bluish rose of *P. peltatum*, 0.97% pelargonin.

Dahlia:

Deep brown-red garden dahlia (cactus dahlia), varieties: "Harold," "J. H. Jackson," "Matchless," "Night," "Othello," average not less than 19.4% cyanin.

Scarlet-red: "Rakete," 5.6% pelargonin; "Alt Heidelberg," 4% pelargonin.

Deep purple (cactus dahlia), disc florets, 23.7% cyanin; ray florets, 15.1% cyanin; some parts up to 30% cyanin.

Blue-red, contain cyanin.

Dark violet, contain pelargonin.

Orange-red, Scarlet } , contain pelargonin with dahlia yellow.

Peony:

Red blossoms, 3–3.5% peonin.

Mallow:

Blue-violet blossoms of *Malva sylvestris* (wild or wood mallow), 6.4% malvin.

Hollyhock:

Blossoms of Althaea rosea, 11% althaein.

Larkspur:

Violet blossoms of *Delphinium consolida*, about 1.68% delphinin.

Salvia:

Scarlet-red flowers of *Salvia coccinea* and *S. splendens*, about 6% salvianin.

Winter Aster (Chrysanthemum):

A large number of scarlet-red, red, and dark red varieties of *Chrysanthemum indicum* contain chrysanthemin mixed in many cases with carotin and xanthophyll.

Florets of dark red "Ruby King," about 7% chrysanthemin.

Summer Aster:

Purplish red summer (China) aster (*Callistephus chinensis* Nees; syn. *Aster chinensis* L.), about 7.4% of a mixture of asterin (most) and callistephin.

Petunia:

"Karlsruher Rathaus" petunia (*P. hybrida* Hort.), about 15.4% petunin.

Poppy:

Corn poppy (*Papaver Rhoeas*) contains about 18% of a mixture of mecocyanin, which predominates, and of another anthocyanin whose anthocyanidin has not yet been obtained pure.

Scarlet gladiolus, contains a pelargonidin glucoside, probably pelargonin.

*Zinnia elegans* Jacq.
*Gaillardia bicolor* Hook.
*Helenium autumnale* L.
*Gladiolus* (except scarlet)
*Tulipa Gesneriana* L.
*Tropaeolum majus* L.
*Ribes rubrum* L. (berries)

} contain cyanidin glucosides in larger or smaller amounts, together with carotin, xanthophyll and other pigments.

Grape:

Skins of fruit of *Vitis vinifera* from different sources contain oenin and some of the anthocyanidin, oenidin; some varieties contain very probably also a few units per cent. of a diglucoside.

Skins of berries of Wild Vine (*Ampelopsis quinquefolia* Michx; *Vitis hederacea* Ehrh.) contain ampelopsin.

Skins of berries of *Vitis vulpina* contain an unnamed monoglucosidic anthocyanin.

Bilberry (Whortleberry):

Skins of fruit of *Vaccinium Myrtillus*, contain myrtillin.

Cowberry (Mountain Cranberry):

Orange-colored berries of *Vaccinium Vitis-Idaea*, about 0.035% idain combined with acid (citric, benzoic, tannic), chiefly in the skins.

Cherry:

Skins of fruit of *Prunus Avium*, contain keracyanin.

Sloe (Black Thornberry):

Skins of fruit of *Prunus spinosa*, contain prunicyanin.

Plum:

Skins of fruit of *Prunus domestica*, contain a cyanidin glucoside.

Black Wild Plum:

Contains myrtillin.

Raspberry
Mountain Ash berry } , contain a cyanidin glucoside.

The work has been progressing since this article was written two years ago. Since that time a number of other anthocyanins have been found: **Betanin** in red beets to the extent of 0.22% of beet meal, the anthocyanidin being betanidin; **raphanin** in radish peelings, the anthocyanidin being pelargonidin; **rubin,** a diglucoside of cyanidin, in a dark violet variety of radish; **rhinanthocyanin,** a product of the hydrolysis of rhinanthin, a constituent of the seeds of *Alectorolophus hirsutus*. Free anthocyanidins are reported in the flowers of *Pelargonium* and of *Papaver Rhoeas*, in the red or olive leaves of *Prunus Pissardii*, and in the fruits of *Ruscus aculeatus* and *Solanum dulcamara*.

## SPRING AND AUTUMN LEAF COLORATION.

Mention has already been made how yellow leaf coloration occurs in autumn by the bleaching of chlorophyll when the vital activity of the leaf is waning. The yellow coloring agents carotin, xanthophylls and sometimes flavonols had been present throughout the entire life of the leaf but had been covered up by the more preponderant chlorophyll color, becoming visible only with the disappearance of the chlorophyll to lend beauty to the autumn scenery.

The red leaf coloration, however, does not exist preformed in the leaves, at least not as a rule. In some few instances autumn and winter reddening is due to red carotinoids, rhodoxanthin being involved in the case of many conifers, lycopin being concerned with certain conifers under tropical conditions. For the most part, however, the red color of spring and autumn leaves is due to anthocyanins.

Many people well acquainted with the beauty of autumn woods have little idea that in spring the young leaves just burst from their buds are frequently red, producing a color effect somewhat resembling that of autumn, although not so pronounced because of the dearth of leaves. This red color of unfolding leaves is usually due to anthocyanins; later some ferment changes these to sugars and the

anthocyanidins which latter are then converted into colorless compounds (pseudo-bases?) which may become oxidized to yellow flavonols, these being hidden by chlorophyll later and in summer. In autumn a reverse change occurs, these yellow flavonols being reduced back again, resulting in anthocyanins to constitute the color in red autumn leaves.

In the production of anthocyanins light is a necessary agent; for instance, green apples will not redden if kept dark. In the case of leaves, during the waning vitality in autumn no further chlorophyll is being produced and that still present bleaches away, permitting the yellow of carotin, xanthophylls and possible flavones or flavonols to show; and if flavonols are present the light being better admitted to the leaf changes them to anthocyanins. In autumn woods the writer has frequently seen instances where an overlapping leaf left a distinct outline upon the under leaf, the shaded portion in the lower leaf being green or yellow because of more or less protection from the light, the exposed portion appearing bright red. A little reflection will enable a person to see how, depending on conditions, it is possible for leaves in autumn to show green, yellow, red, or all three colors in the same tree or even leaf.

The production of anthocyanins is also closely related to sugar content, sugars being necessary for production of glucosides. Sometimes in early autumn a tree will be found having only a few red or partially red leaves, the rest being still green. Examination of such leaves will show a break in a rib or in the petiole; the green leaves are still manufacturing sugar which is being transported to other plant parts, but in the broken leaf the path of transport was interrupted and sugar thus accumulated; and, as the chlorophyll of the broken leaf was bleached away by light, the yellow flavonols were converted in the presence of the light to the glucosidal anthocyanins. Later the same thing happens to the other leaves where sugar accumulates because the avenue of transport is interrupted by the growth of the corky layers across the bases of the leaves, which layers both cut away the leaves from the stems and also close the wounds resulting in the twig from the dropping away of the dead leaves. Any instances of premature coloration of branches or entire trees will betray the cause in some injury—a break, damage to the bark or roots, an insect or fungoid blight—causing loss of vitality and accumulation of sugar.

Another favoring agent for anthocyanin production in autumn leaves is a temperature rather low but above the freezing point, such condition abruptly checking vitality while the leaf is still full of sap. Alpine and arctic plants often have a red color because they are subjected to conditions favoring red leaf coloration; *i. e.*, low temperature which inhibits chlorophyll formation, bright light, and the production of sugar which is accumulated rather than starch because the presence of sugar in the cell sap lowers its freezing point, enabling the plant to withstand lower temperatures. Any visitor to more northern, therefore cooler, latitudes has probably observed the extreme brilliance of the reds of those autumn woods and any climber of real mountains must have observed the brightness of flower colors at high elevations where a clear cool atmosphere and bright skies prevail; for instance, the painted cup of our western states is somewhat disappointing on the plains but in the mountains its vivid, fiery crimson makes it the most conspicuous of flowers.

Perhaps merely a coincidence or possibly a necessary relationship, tannins are always associated as a component in plants with red colored leaves. We can readily recall such cases in the sumacs, red and scarlet oaks, blackberry leaves, etc.

The brown coloration of dead leaves finds an explanation in the fact that colorless water- and alcohol-soluble chromogens (probably flavones, flavonols) of leaves give golden yellow salts with alkalies which oxidize to a dark brown color and it is thought that these brown oxidation products of the yellow alkali salts of the colorless chromogens play the chief rôle in the post-mortal browning of leaves, a reaction accelerated, no doubt, by oxidizing enzymes. In some leaves the brown may blend with remaining leaf carotinoids to a golden bronze.

Our article would not be complete did it not refer to:

**Phycoerythrin,** the principal pigment of red seaweeds which also contain carotin and xanthophyll, and

**Phycophaein,** the coloring matter in dried brown seaweeds, it being a post-mortal oxidation product of colorless chromogens present in the fresh plant, carotinoids being also present.

Nor should we omit mention of the coloration of white flowers, some cultivated white leaves, etc., which, of course, is the natural cellulose color untinctured by any foreign tints. The brown color of tree bark, dead leaves and dead vegetation in general is in some cases apparently an oxidation product of flavones or flavonols as previously indicated; in others, the result of the oxidizing of tannins in cell walls when exposed to light and air.

For further information the writer would suggest reference to those books and journals of which he has made liberal use in this article; *viz.*,

*Liebig's Annalen*, for the original papers on chlorophyll, carotinoids and anthocyanins by Willstätter and co-workers.

*Chemical Abstracts* and the *British Chemical Abstracts*, for an abbreviated account in English of the above and related papers.

"Untersuchungen über Chlorophyll," by Willstätter. (Julius Springer, Berlin.)

"Carotinoids and Related Pigments," by Palmer. (Chemical Catalog Co.)

"The Natural Organic Colouring Matters," by Perkin and Everest. (Longmans, Green and Co.)

"An Introduction to the Chemistry of Plant Products," by Haas and Hill (Longmans, Green and Co.)

"A Textbook of Botany for Colleges," by Ganong. (Macmillan Co.)

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## A STUDY IN PHARMACY.

The article which follows is of unusual interest not only because of the value of the research, even though many of Nature's methods involved remain as unexplained mysteries, but also because it presents a study of many years ago. Liberty is taken in quoting lines, which have reference to thoughts that preceded, from one of the author's letters: "The change of starch stored in a bulb, when comes the time to change, the deposition of starch in that bulb, when comes the time for the plant's food for the coming spring to be placed therein, the same mysterious water moving upward and downward as temperature changes and produces this marvelous phenomena—staggers me when thinking the subject over."—Editor.

# A STUDY IN PHARMACY.*

## Nature's Percolation Processes in Connection with the Formation and Excretion of Dew, versus Artificial Percolation.

BY JOHN URI LLOYD.

These experiments, seemingly afar from pharmacy, were instituted in 1879, by reason of the author's belief in the necessity for establishing differentiations between liquid movements of living plants, and extractive phases in pharmacy as applied to dead plants.

Intimately connected are Nature's sap circulation processes with the art of percolation, in which a selected menstruum, passing through coarsely comminuted or powdered organic tissues, abstracts therefrom certain desirable soluble constituents, while excluding others.

In Nature's laboratory we have the phenomenon of plant assimilation and excretion, complicated with the natural circulation of juices locked in, or passing through, cell and tissue complexities. The general distinction between the processes seems to be that in artificial percolation the liquid gravitates downward,[1] while in Nature's laboratory, the movement of sap is usually upward, a movement not due, wholly, to the force of capillarity.

Be this as it may, the incentive to the author's as yet unpublished studies[2] of menstruums and plant structures connected with percolation, have been largely stimulated by the many questionings inspired by this study of Nature's processes of percolation.

In these, the building and metamorphoses of multitudinous and diversified living structures have one marked distinction from artificial laboratory experiments in that a single liquid, water (plus dissolved materials), constitutes Nature's universal menstruum.

*Oct. 19, 1879.—Preliminary Experiments to Discover the Proportions between Moisture Condensed from the Air, Evaporated from the Earth, and That Exuded by Vegetation.*—Three factors seemingly need to be considered in this attempt, *viz.*, to establish processes to differentiate between:

(1) Moisture in the atmosphere.
(2) Moisture evaporated from the earth.
(3) Water exuded by vegetation.

*Experiment No. 1.*—The following arrangement was determined upon as adapted to preliminary experimentation: Three twelve-inch bell glasses, as shown by the accompanying cuts,

A, over the earth and growing young grass,

B, over the bare earth,

C, on a glass plate, all side by side (Fig. 1).

Into each was placed D, D, D, a dish of freshly burned calcium chloride. The experiments were conducted simultaneously, under as nearly identical conditions as possible.

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* Intended as a chapter in "A Study in Pharmacy," a continuation of "Precipitates in Fluid Extracts," *Transactions, Am. Pharm. Assoc.*, 1879 to 1885.

[1] A process for percolation *upward* has been experimentally tried.

[2] The present paper, following that of 1885, may be considered as the one that was prepared for, and should have appeared in, the Proceedings of 1886.

*Result.*[1]—A. Earth and grass together exuded 4.9 gr. moisture.
B. Bare earth beside the glass exuded 3.0 gr. moisture.
C. Bell glass over a plate gave 0.6 gr. moisture.

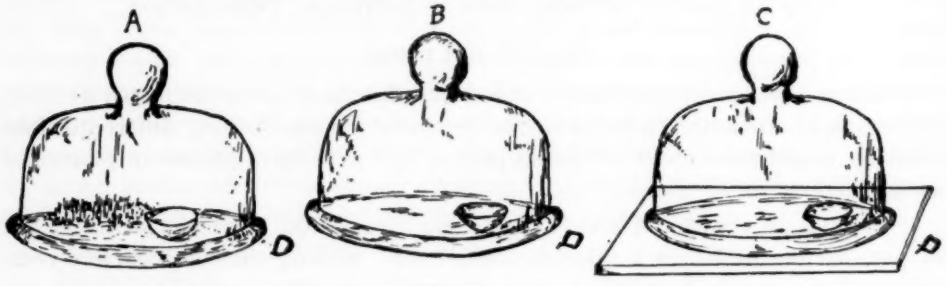


Fig. 1.

This gave 4.9 gr.−3.0 gr.−0.6 gr. = 1.3 gr. moisture yielded by the grass. The inner surface of all the bell glasses was dry when the dishes of calcium chloride were removed.

*Experiment No. 2.*—An attempt was next made to determine whether "dew" would have been deposited on the inner glass had no chloride of calcium been present. This seemed to be established in the affirmative as follows:

Chloride of calcium was removed from A. In half an hour moisture was condensed on the inner surface of the bell glass.

Same result followed with B.

The inner surface of bell glass C remained dry.

These indicated that the exhalations from both the earth and grass supersaturated the air, the excess of moisture being, when no calcium chloride was present, deposited as "dew" on the inner surface of the glasses A and B, but that there was not enough moisture in C to reach the dew point.

The details of the following experiments, designed to further study the problem, are as follows:

*Experiment No. 3.*—Over clump of grass under a bell glass.

| | | |
|---|---|---|
| Weight of watch crystal and chloride of calcium, | 10 A.M. | 127.30 gr. |
| | 12 A.M. | 132.20 gr. |
| | Increase | 4.90 gr. |

Thermometer, 10 A.M., 53°; 12 A.M., 56°.

No moisture on inner surface of bell glass.

The grass was now cut and weighed 12.60 gr.

*Experiment No. 4.*—At the time of making No. 3, a bell glass was placed on bare ground beside bell glass No. 3.

| | | |
|---|---|---|
| Weight of watch crystal and chloride of calcium, | 10 A.M. | 133.80 gr. |
| After exposure, | 12 A.M. | 136.80 gr. |
| | Gain of moisture | 3.00 gr. |

No moisture on the inner surface of the bell glass.

*Experiment No. 5.*—At the time of making Nos. 3 and 4, a bell glass was placed on a glass plate (beside 3 and 4).

| | |
|---|---|
| Weight of watch crystal and chloride of calcium | 136.80 gr. |
| After exposure | 137.40 gr. |
| Gain of moisture | 0.60 gr. |

No moisture on inner surface of bell glass.

[1] Grain weights (gr.) were employed throughout, the metric system not having been adopted at the date of experimentation.

*Experiments Nos. 6 and 7.*—Simultaneously with the foregoing, Experiments Nos. 6 and 7 were instituted to establish whether dew would have collected on the inner surface of the bell glass (Fig. 1, A and B explains the process) had there been no calcium chloride. The result was as follows:

*No. 6.*—Bell glass over clump of grass, paralleling Experiment No. 1, A; no chloride of calcium. In half an hour the inside of the glass was covered with moisture, which increased until 12:00 M.

*No. 7.*—Bell glass inverted over bare ground (Fig. 1B). In half an hour moisture covered its inside, increasing until noon.

Experiment No. 2 (Fig. 1C) had previously shown no moisture on bell glass over glass plate.

*Summary.*—These experiments were conducted simultaneously, and were in every way parallel as regards the temperature, time of exposure, etc.

In all, no attempt was made to locate the chief point or points of evaporation from the grass, the object being to differentiate between the moisture that earth, grass and air gave to chloride of calcium, under conditions recorded. It was also shown that when no chloride of calcium was present, moisture above the supersaturation point of air was deposited on the inner surface of the bell glasses A and B, but not on C, the one over the glass plate.

**Establishing the Principal Excretory Points of the Grass.**

These experiments, made in the summer of 1879, were resumed in the summer of 1880, with the object of establishing the principal excretory point, or points, of the grass. A double bell glass was now employed, the aim being to protect the inner glass from temperature changes, and keep it at as even a temperature as possible, above the dew point, thus preventing the air from unloading its moisture on the inner surface of the inner glass. The device is illustrated (Fig. 2), the results of the experiments follow:

*Experiment No. 8.*—August 1, 1880; bell glass large and high, placed at sundown over another, low glass (12 inch), which covered a clump of orchard grass (*Dactylis glomerata*).[1] Early the next morning the grass was covered with minute globules of moisture, the tip of each carrying a large globule. In four hours the moisture from the surfaces of the leaves had evaporated but the globules upon the tips had *increased* in size. These globules remained on the bell-covered grass all day; two hours of sunshine directly upon them.

Fig. 2.

*Explanation.*—This illustrated that the grass not only excreted water from its tips (assuming that the globules were *excreted*) but that if evaporation were prevented, this "dew" remained even in the direct sunshine. As a familiar parallel, we have the dew-drop of grass in a shaded ravine long after it has disappeared from the hillside and crest, lingering even until the sunshine is directly upon it.

[1] Wherever the term "orchard grass" is used *Dactylis glomerata* is intended. The term "blue grass" always refers to *Poa pratensis.*

**Grass Excretes "Dew-drops" in the Daytime.**

The foregoing experiments (Nos. 1 to 7) indicate that if the air be saturated with moisture, evaporation from an excreting substance continues in the form of vapor that can be absorbed by calcium chloride. If there be an opportunity to condense the liberated moisture on a more adhesive (attractive) surface, such as glass, shown herein, at lower temperature,[1] but that if evaporation (No. 8) be prevented, water is excreted. Reasoning from the experiments tabulated, it was assumed that should the grass be surrounded with cold, still air, dew globules must form on the excretory tips, regardless of sunlight. This is established by the following experiment.

*Experiment No. 9.*—August 1, 1880, 11 A.M.: A tall narrow bell glass (Fig. 3) was inverted over a clump of orchard grass; day hot and close. The grass was dry, having been in sunshine three hours. Earth was now thrown up halfway around the outside of the glass, and on this ice-cold water was poured.[2] In one hour each blade of grass held a drop of dew upon its tip.

Fig. 3.

Fig. 4.

*Experiment No. 10.*—4 P.M.: A bell glass, low and flat, was placed over a porcelain dish that held lumps of ice, the dish being sunken in a bed of grass (Fig. 4). In a short time a drop of dew appeared on the tip of each blade.

*Explanation (9 and 10).*—These demonstrated that cooling below the "dew point" in a bed of stagnant air produced dew of excretion in the daytime. Grass in the same bed outside the bell glasses gave no dew before 4:45 P.M., my notes of the day being as follows:

Rain at 12 M. 6 P.M. warm, cloudy, still. At 4:45 drops of dew had started on the grass tips over the entire grass plot.

**Stagnant Air.**

The term "stagnant air" introduces a factor, which needs now be considered. Experiments Nos. 9 and 10 indicate that a bed of still, cool air within the earth belt (No. 9) and around the ice on the plate (No. 10) must become saturated in order that the water of excretion from the grass tips be not liberated as vapor. This involves problems governing natural dew conditions, the following experiments being

[1] I am presuming here to use a term expressive of the fact that different affinities prevail between surfaces of different substances. As yet only temperature distinctions have been considered, and these only are now to be kept in mind.

[2] The cut (Fig. 3) shows earth on the sides, front being removed.

made five days before those last (August 1st) recorded.[1] The experiments were made on a level door yard field of grass.

*Experiment No. 11.*—August 5, 7 P.M.; clear.

Thermometers A and B were suspended by a thread to a wire stretched between two posts six feet high, located between two brick buildings, thirty feet apart. Thermometer C lay on a clump of grass 4 inches in height. Thermometer D rested with its bulb in the surface of ground (Fig. 5). B was 40 inches high; A, 60 inches.

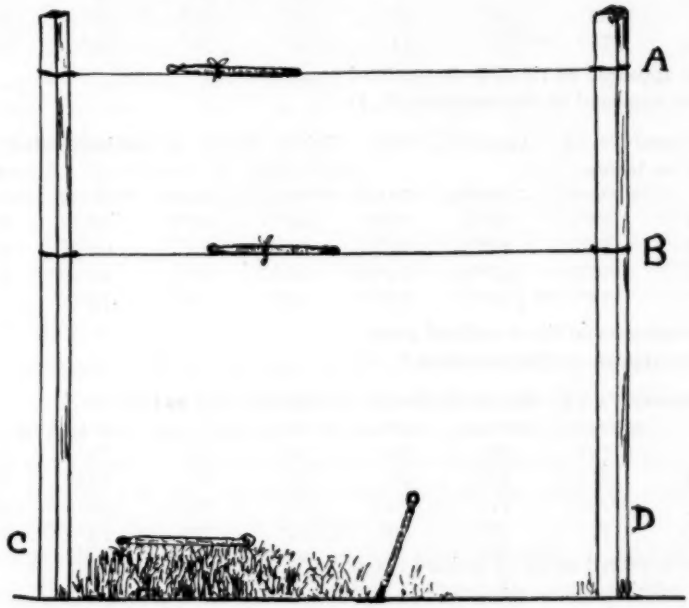


Fig. 5.

A, 60 inches high; thermometer on wire. C, Thermometer in grass, 4 inches above the earth.
B, 40 inches high; thermometer on wire. D, Thermometer on the ground.

| | 7:15 P.M. | 8:00 P.M. | 9:30 P.M. | 10:00 P.M. |
|---|---|---|---|---|
| A (dry) | 73° | 68° | 63° (dry) | 62° (dry) |
| B (dry) | 72° | 66° | 63° (dry) | 61° (dry) |
| C* (dew) | 70°** | 62° | 58° (wet) | 58° (wet) |
| D | 74° | 72° | 69° (wet) | 68° (wet) |

* Dew appeared on tip of grass.

** Dew appeared on thermometer.

*Explanation (11).*—These show that the dew point varied with the location of the thermometer, seemingly being dependent on temperature and "stagnant air." The high temperature of D needs to be restudied to discover if it be error of experiment[2] (see Experiments Nos. 12 to 19). A steady decrease of total tempera-

[1] Owing to my many business and other cares and few hours for recreation, I could not devote my whole time systematically to any one subject. In addition, favorable weather conditions were a necessity. To the foregoing I must plead a bit of selfishness that often led me, by the entrancement of thought, to make experiments in advance of the natural sequence. These facts will account for several date discrepancies.

[2] Mr. J. T. Lloyd informs me that this, in his opinion, needs no repetition. He states that in his travels in desert lands it was the custom when necessity required to scoop trenches in the desert sand and, wrapped in his blanket, sleep warmly during cold nights.—J. U. L., 1923.

ture is shown in the four experiments. These were repeated (12 to 19) to establish several questionable phases.[1]

*Experiment No. 12.*—August 6, 1880; clear. Arrangement same as No. 11, Fig. 5, Aug. 5th.

| | 7:00 P.M. | 7:13 P.M. | 8:00 P.M. | 9:00 P.M. | 9:30 P.M. | August 7th. 10:00 P.M. | 4:30 A.M. |
|---|---|---|---|---|---|---|---|
| A | 74° | 73° | 69° | 67° | 66° | 65° | 58° |
| B | 73° | 71° | 67° | 66° | 65° | 63° | 57° |
| C | *69° | 65° | 63° | 62° | 61° | 61° | 54° |
| D | 75° | ** 75° | 74° | 72° | 72° | 70° | 66° |

* Dew appeared on tip of grass (orchard grass).
** Dew appeared on thermometers A, D.

*Experiment No. 13.*—August 7, 1880; slightly cloudy at sundown, clear 9 P.M.; conditions same as before.

| | 6:30 P.M. | 7:00 P.M. | 7:30 P.M. | 8:00 P.M. | 9:00 P.M. | 9:30 P.M. | 10:00 P.M. |
|---|---|---|---|---|---|---|---|
| A | 78° | 75° | 72° | 68° | 66° | 65° | 64° |
| B | 77° | 74° | 70° | 67° | 65° | 64° | 63° |
| C | *72° | 67° | 64° | 63° | 63° | 62° | 62° |
| D | 78° | ** 75° | 75° | 74° | 73° | 72° | 72° |

* Dew appears on tip of orchard grass.
** Dew appears on thermometers C, D.

*Experiment No. 14.*—August 9, cloudy; conditions same as last.

| | 6:30 P.M. | 7:00 P.M. | 7:30 P.M. | 8:00 P.M. | 9:00 P.M. | 9:30 P.M. | 10:00 P.M. |
|---|---|---|---|---|---|---|---|
| A | 79° | 78° | 76° | 75° | 74° | 74° | 73° |
| B | 77° | 77° | 75° | 74° | 74° | 73° | 72° |
| C | *72° | 71° | 70° | 71° | 70° | 69° | 69° |
| D | 77° | 77° | 76° | 75° | 75° | 75° | 74° |

* Dew appeared on tip of orchard grass.

Very cloudy entire evening, and heavy flow of dew from plants, but none on inanimate bodies. Rain at 8 P.M. for 20 minutes.

*Experiment No. 15.*—August 10, 1880; clear at sundown; conditions same as before.

| | 6:30 P.M. | 7:00 P.M. | 7:30 P.M. | 8:00 P.M. | 8:30 P.M.[c] | 9:00 P.M. | 9:30 P.M.[d] | 10:00 P.M. |
|---|---|---|---|---|---|---|---|---|
| A | 76° | 73° | 73° | 70° | 71° | 71° | 70° | 68° |
| B | 75° | 73° | 72° | 69° | 71° | 70° | 70° | 67° |
| C | 72°[a] | 67° | 67° | 67° | 68° | 68° | 67° | 64° |
| D | 75° | [b] 75° | 74° | 74° | 73° | 73° | 73° | 72° |

[a] Dew on tip of grass.
[b] Moisture on thermometers C, D.
[c] Clouded from southeast; very slight breeze arose from that direction.
[d] Clear again.

*Experiment No. 16.*—August 11, 1880; cloudy all afternoon.

| | 6:15 P.M. | 7:00 P.M.[b] | 7:30 P.M. | Clear. 8:00 P.M. | Clear. 8:30 P.M. | Clear. 9:00 P.M. | Clear. 9:30 P.M. | Clear. 10:00 P.M. |
|---|---|---|---|---|---|---|---|---|
| A | 76° | 74° | 72° | 72° | 70° | 69° | 69° | 69° |
| B | 75° | 73° | 72° | 71° | 69° | 68° | 68° | 69° |
| C | 74°[a] | 69° | 68° | 68° | 67° | 66° | 66° | 65° |
| D | 76° | 75° | 74° | 74° | 72° | 73° | 73° | 73° |

[a] Dew on tips of orchard grass (C); cloudy and very still.
[b] Dew on thermometers C, D.
In the morning, 6 A.M., wind was blowing and it was very cloudy.

[1] Fig. 6 is marked "lost."

*Experiment No. 17.*—August 12, 1880; clear.

| | 6:30 P.M. | 7:00 P.M. | 7:30 P.M. | 8:00 P.M. | 8:30 P.M. | 9:00 P.M. | 9:30 P.M. | 10:00 P.M. |
|---|---|---|---|---|---|---|---|---|
| A | 78° | 74° | 72° | 70° | 69° | 68° | 68° | 66° |
| B | 76° | 73° | 70° | 69° | 68° | 67° | 67° | 65° |
| C | *70° | 66° | 66° | 67° | 64° | 64° | 63° | 62° |
| D | 77° | 76° | 75° | 74° | 74° | 73° | 72° | 72° |

* Dew on tips of grass of all specimens.

*Experiment No. 18.*—August 13, 1880; clear.

| | 6:45 P.M. | 7:00 P.M. | 7:30 P.M. | 8:00 P.M. | 8:30 P.M. | 9:00 P.M. | 9:30 P.M. | 10:00 P.M. |
|---|---|---|---|---|---|---|---|---|
| A | 79° | 76° | 72° | 72° | 71° | 69° | 68° | 66° |
| B | 77° | 75° | 71° | 70° | 69° | 68° | 67° | 65° |
| C | *68° | 67° | 64° | 64° | 63° | 62° | 63° | 64° |
| D | 78° | 75° | 74° | 74° | 73° | 72° | 72° | 72° |

* Dew on tips of grass.

*Experiment No. 19.*—August 14, 1880; clear.

| | 7:00 P.M. | 7:30 P.M. | 8:00 P.M. | 8:30 P.M. | 9:00 P.M. | 9:30 P.M. | 10:00 P.M. |
|---|---|---|---|---|---|---|---|
| A | 79° | 79° | 77° | 76° | 73° | 74° | 72° |
| B | 77° | 77° | 76° | 75° | 72° | 73° | 71° |
| C | *69° | 68° | 68° | 68° | 67° | 66° | 65° |
| D | 77° | 77° | 76° | 76° | 75° | 74° | 74° |

* Dew on tips of grass.

*General Summary.*—Experiments Nos. 1, 2, 3, 4 and 5 demonstrate that both the earth and vegetation exhale moisture, which, under the conditions named (chloride of calcium present), does not condense upon the inner surface of a bell glass inverted over them. The experiments show that during the time consumed, the air gave (Fig. 1) 0.60 gr., the earth (Fig. 2) 3.00 gr., and the grass (Fig. 3) 1.30 gr. moisture.

Experiments Nos. 6 and 7 (drawings lost)(no chloride of calcium present) demonstrated that the air thus saturated will deposit its excess of moisture over the inner surface of a glass bell jar, which moisture is properly (according to the dictionary definition) "dew condensed from the atmosphere." In these experiments no globule of water appeared on the tip of a grass blade.

Experiment No. 8 (Fig. 2) protected the inner bell glass from decrease of temperature, thus preventing the contained air from depositing its excess of moisture. As a result, the excretion of the grass, surrounded by supersaturated moist air, appeared as water globules at the point of liberation.

Experiments Nos. 9 and 10 (Figs. 3 and 4) demonstrated that by artificially cooling the stratum of air that surrounds the grass, the dew point is accompanied by water secretion from the grass, regardless of the time of day. We are thus (Experiments 1–10) shown that:

First, the excretion of moisture by growing vegetation is continuous.

Second, in unsaturated, stagnant air, this moisture is exhaled as vapor.

Third, if the air be saturated and stagnant, it appears as water, at the excretory point or points regardless of temperature or time of day.

Experiments Nos. 11–19 in a general way show that under the conditions present, the vegetation dew point of the seven experiments ranged between 69° and 74°, the average being 71$^1/_7$°.

That when the stratum of air (Fig. 5C) to the height of the thermometer became supersaturated with moisture, water of excretion (dew of vegetation) appeared at the grass blade tips.

That not until the temperature had approximately fallen ten degrees, did the thermometers in the grass and on the ground get wet (moisture condensed from the atmosphere).

That this stratum of air at the dew point was then cooler than either the earth it rested upon or the air a few feet above. This difference was sometimes most marked, and, inasmuch as in a water-saturated atmosphere, decrease of temperature by evaporation is impossible, the phenomenon needs be explained by further investigation (see footnote, 2 page 411). Possibly, continuous occlusion of vapor from the surface of this stratum of air into the zone above permits evaporation sufficient both to keep stratum (Fig. 5C) at its low temperature and to cool the successive strata above.[1]

That the air above rapidly increased in temperature with height is shown by thermometers (Fig. 5A and B). But at no period did this air, in any experiment, contain enough moisture to wet the thermometers, regardless of the temperature.

**Conclusion.** Air influenced by moisture tends to form strata of varying densities, the same being governed by temperature and air motion. Under the conditions named herein, over a flat lawn between brick buildings, where escape of the heavy air was impossible and air stagnation prevailed, there was no perceptible air current. However, the greater gravity of the lower moisture-saturated stratum and the supply of dew of vegetation should theoretically make interesting air movements on a grass-covered hillside, in sloping valleys, or across the crest of a "hog-back ridge," where opposing valleys head. In these directions the following researches apply:[2]

**Some of the Influences of Dew.** The foregoing experiments (Nos. 1–19) show how dew excreted from grass, uniting with vapor of earth, produces a thin stratum of cold, supersaturated, moist air. This air should, theoretically, on an incline, flow downward as does water. With the object of investigating this premise the grassy slopes of Eden Park, Cincinnati, were sought in August 1881, in the afternoon. Here a sun-bathed grassy valley gave near the same temperature, top to bottom. Immediately after sundown decrease of temperature began, more rapidly at the bottom. Within a moderate time, dew of excretion sprang from the tips of the grass blades in the lowest part of the valley. Up the hill-sides, the dew successively crept. Cold was the air at the bottom, warm at the top of the hill. It was evident that a sheet of cold air, caused by evaporation of earth and vegetation, at sundown began to slip down the hillside. This was verified by pouring muriatic acid on spots of the lawn, and placing moistened

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[1] Experiments not herein recorded, indicated to me that very sharp lines of demarcation separated zones of air under such conditions as these. They even approach the lines of demarcation between immiscible liquids. See Proceedings of Am. Pharm. Assoc., 1879–1885, "Precipitates in Fluid Extracts."

[2] So entranced was I by this phase of my study, that only by severe force of will power could I bring myself to its abandonment. So far-reaching did this subject of "dew" appear, as to lead me to accept that its influence on conditions governing life of animals reaches far beyond such restrictions as govern its presence as water alone. But, my investigations being a part of a study of plant pharmacy, and the relationships of water movements within the plant so intimately connected with percolation and pharmacy processes, I was forced to turn to other phases of plant juice movements, excretion and secretion.

blue litmus paper above and below it. The current was ever toward the bottom as shown by the reddening of the paper. Finally a lake of supersaturated air filled the valley and extended above the hill crest.[1]

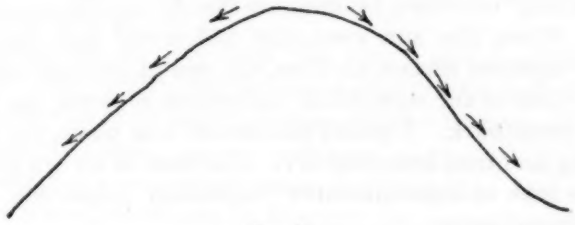

Fig. 7.

Fortunately, the great grass-covered ridge that separates the waters of the Kentucky and Licking rivers, crested by the Lexington Pike, furnished every possible phase of hill crest, slope, valley-head and deep valley. As a summary of these further experiments and observations on the influence of dew, I may conclude as follows:

**Evening.** Given any herbage-covered ridge, evaporation of excreted water therefrom, after sundown, cools the surface earth layer (see Fig. 5). This, when vegetation is very active, may even, on a hill crest, start water globules soon after sundown. This sheet of cool air seeks an

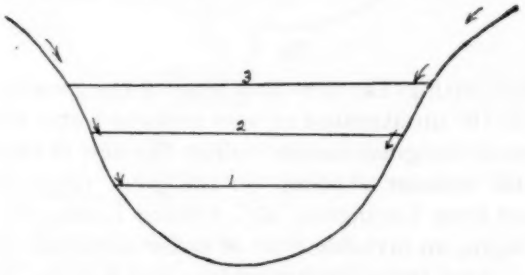


Fig. 8.

Lines 1, 2 and 3 represent successive air lakes (strata of vapor) within which vegetation successively, from below upward, is dripping with water of excretion.

equilibrium, flowing down the slopes into the valley-heads, thence to the bottom, where an air lake is formed. This motion seems distinct from *wind*.[2] It is a displacement process that may be imperceptible as an air current. Every growing bit of vegetation contributes its share of vapor. When a stratum is saturated, water, as *Dew of Vegetation*, exudes from pinnate leaves, from the tips of grass, as well as from the points of plant excretion generally. The blade of grass

[1] Thinking that I must be demented, park care-takers and unresponsive Cincinnati observers received with ridicule, approaching hostility, my invasion of public grounds and my experiments. Hence I transferred them to the valleys and meadows of Northern Kentucky, that bordered the Lexington Pike. Here, one is free to be "crazy," providing he shoots no one, and even then it is give and take. The Eden Park location is now the "reservoir."

[2] In reading these notes I recall that a strong wind prevails under these conditions in the valley slopes of Cayuga Lake near Cornell University. J. T. L.

sparkles in its own "dew." The tall tree in the deep valley finally moistens the earth from its topmost bough, with its own dripping water of excretion. The total amount of water thus excluded is enormous each dew-breeding night.[1] This movement may be shown by diagram No. 8.

**Morning.**

When the sun rises, the hill crests first are warmed. The topmost surface air rises, the dew of the crest disappears. Suction of the upward air movement reverses the direction of the sheet of air—it turns back. Upward the arrows now point, the air lake of cold, saturated air, fog and mist is sucked dry. Currents of air are produced, usually wind arises, the lake of supersaturated vegetation exhalation becomes cloud fogs where conditions favor.

The drip of water from leaves and herbage ceases as the air drawn from above replaces that which is night-saturated. Sunshine, accompanied by air currents, breaks through the trees and shrubs into the interstices of the grass, the moving

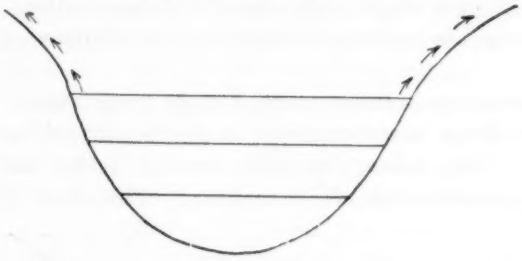

Fig. 9.

air shakes from their settings the dew-drop tears of the growing herbage. Vapor of plant excretion in the unsaturated air now replaces water tears. Excepting in the darkest recesses of the grass-banked valley, the dew of the night is gone.

Stand, any still summer evening, on the great ridge that for fifty miles stretches southward from Covington, Ky., toward Lexington. In the evening, each ravine head begins an invisible river of water-saturated air, that, increasing in size and depth as from the summit it widens and deepens, flows all night long down into the valley, where is produced a lake that when chilled below the dew point, or when mixed with various strata of air, of other temperatures, becomes a fog bank.

Comes now the morning, back turns the river current, the lake is sucked dry. Then, all day long across the ridge where heads the valley, the wind blows.[2]

THE DEW OF VEGETATION.

**Rivers and Lakes of Air-Saturated Currents.**

In the preceding pages it is shown that water of plant excretion must be accepted as a factor of the "dew" problem. Whoever cares so to do can study the phenomenon in the manner presented, or by other, perhaps better, suggested processes. Possibly there is no easier

[1] Do not accept that water excretion ceases in the day or in windy weather. Then even *greater activity* prevails, but the water escapes as vapor and is blown away.

[2] Such idealistic conditions prevail constantly during the summer in the *locality cited*. However, sun-bred air currents and air movements from afar often sweep the whole country over in wind deluges that obliterate such as this. These interferences, however, do not disturb the "dew" excretion, which continues either as vapor or as water.

and more conclusive method than of watching the grass tips on a still day, as evening closes down. To see the dew globule spring into place, to fall and be again replaced, seemingly is all that needs be necessary unless the "Natural Fallacies of Observation" prevail.[1]

In the preceding chapter, the term "air river" and even "lake" has been used. This implies *much water*, and when connected with such as "dew supersaturated air" is either an extravagance or an assertion that needs be established.

In establishing this point, several problems such as temperature changes, moisture that under decreased temperature would be dew were no vegetation present, and other intruding phases of thought, are to be considered. In this object (amount of water excreted) the following series of experiments were instituted.[2]

DETAILED EXPERIMENTS ON WATER EXCRETION OF GRASS.

*Experiment No. 20.*—August 11, 1879. Two-inch watch crystals severally weighed were, at different heights, hung by strings over a grass plat, 8:30 P.M. (see Fig. 5).[3]

| 10:00 P.M. | (A.) | (B.) | (C.) |
|---|---|---|---|
| | 60 inches | 40 inches | 4 inches |
| | no dew | no dew | 0.34 grain dew |

*Experiment No. 21.*—Simultaneously, at same heights others were suspended, over a gravel walk six feet from No. 1.

| 10:00 P.M. | (A.) | (B.) | (C.) |
|---|---|---|---|
| | 60 inches | 40 inches | 4 inches |
| | no dew | no dew | no dew |

Morning was cloudy with some wind. Dew had evaporated from C. This experiment showed that at 10:00 P.M. the air over the gravel walk, six feet from the supply of water (dew drop), had not become saturated to the dew point, nor at A and B.

*Experiment No. 22.*—Watch crystals hung on strings over the grass, 7:00 P.M., August 12th, to 6:00 A.M., August 13th, collected condensed moisture as follows:

| | 10:00 P.M. | 6:00 A.M. |
|---|---|---|
| (1) Top, 60 inches from grass..... | Dew 00 | 2.14 |
| (2) Middle, 40 inches from grass..... | Dew 00 | 2.55 |
| (3) Bottom, 10 inches from grass..... | Dew 0.96 | 3.22 |
| Crystal over gravel walk 10 inches from walk | Dew 00 | 1.96 |

*Explanation.*—This shows that at 10 P.M. moisture of adhesion had collected only on the glass 10 inches from the grass; none on the glass over the gravel walk 10 inches from the ground, but at 6 A.M. had been deposited increasingly (1, 2 and 3) from below upward.

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[1] "A Study in Pharmacy," pp. 58–63. Published for private distribution.

[2] The original notes, deposited in the Lloyd Library, give weights of glasses and calculations therefrom. A summary of results only is here deemed necessary. In this publication many detailed experiments were illustrated in order to establish that the fallacy of observation was an unavoidable factor in experimentation. It may be largely summarized as errors due to the personal equation.

[3] Adhesion distinctions of different materials are pronounced. Surface conditions from smooth to rough also need to be considered.

*Experiment No. 23.*—Watch crystals on wires, 7 P.M., August 13th, to 6 A.M., August 14th; clear.

| No. | Aug. 13. | Dew. (A.) | Aug. 14 6 A.M. Morning dew. (B.) | Clear, Aug. 15 6 A.M. Dew. (C.) | Cloudy Aug. 18 6 A.M. (D.) | Clear Aug. 19 6 A.M. (E.) | Clear, fog all night Aug. 22 6 A.M. (F.) | Clear, slight fog Aug. 23 6 A.M. (G.) | Clear, slight fog Aug. 24 6 A.M. (H.) |
|---|---|---|---|---|---|---|---|---|---|
| 1—60 in. high | 10 P.M. | 00 | 3.63 | 0.86 | 0.15 | 1.90 | 9.47 | 5.00 | 7.85 |
| 2—40 in. high | 10 P.M. | 00 | 5.02 | 0.90 | 0.24 | 3.33 | 10.37 | 5.41 | 5.65 |
| 3—10 in. high | 10 P.M. | 0.62 | 7.23 | 2.16 | 0.94 | 5.23 | 11.85 | 5.94 | 7.92 |
| 4—10 in. gravel walk | 10 P.M. | 00 | 1.07 | 0.68 | Not weighed | 4.70 | Not weighed | Not weighed | Not weighed |

*Explanation.*—This (No. 23) shows that at 10 P.M. water of adhesion had collected on the glass 10 inches from the grass (0.62) but none on those higher. The glass 10 inches over the gravel walk was dry.

After this, all glasses collected moisture, heaviest from below upward, excepting the glass nearest the gravel. The eight weighings (A to H) were quite uniform. The decrease in cloudy weather (D) as well as the marked increase on the foggy nights (F, G and H) are important. The exception (60 inch H), 7.85, was fact, not error of weighing. These experiments, together with No. 9, are deemed sufficient to establish that under the conditions governing these experiments, dew of condensation is greater over herbage than over the bare ground, and that even the "moisture condensed from the atmosphere" is partly mothered by vegetation. And yet, in one experiment, No. 24, August 16, 1880, the earth exhaled enormously as contrasted with moisture from a few blades of grass:

*Experiment No. 24.*—August 16, 1880, 8 P.M., to August 17th, 6 A.M.

| | Weight, gr. |
|---|---|
| A—Glass over a sheet of rubber resting on the ground, a dish of $CaCl_2$ within, gave 6 A.M. | 168.74 |
| 8 P.M. | 168.00 |
| Moisture from air | 0.74 |
| B—Glass over ground, 6 A.M. | 182.70 |
| 8 P.M. | 169.45 |
| Moisture from air and earth | 13.25 |
| | 0.74 |
| Moisture from earth | 12.51 |
| C—Glass over rubber, through which are projected a few blades of grass, 6 A.M. | 200.70 |
| 8 P.M. | 185.60 |
| Combined moisture of earth, air and grass | 15.10 |
| Moisture from earth and air | 13.25 |
| Moisture from grass | 1.85 |

*Explanation.*—This shows that the earth here excreted 12.51 gr. moisture, the grass 1.85.

*Experiment No. 25.*—August 15, 1879; 12:00 M.

Two thermometers placed side by side in the shade, on grass 3 to 4 inches long; both registered 75°. Glass shade was placed over one. In a few moments it registered 77° and remained from two to four degrees above the other, while the glass shade covered it.

The shade was then raised two inches and a current of air from a fan thrown under it, both thermometers being in the air current. The temperature of each fell to 76°.

Both thermometers were now placed beneath the shade, No. 1 on the grass, 3 inches above ground, No. 2 suspended near the top of the shade, 4 inches above No. 1.

(1) 83°
(2) 85°

*Explanation.*—These results show that temperature increased when the air was confined, and that it varied according to location within the receptacle.

*Experiment No. 26.*—August 15, 1879; 12:00 M. (shade).

Bulbs of thermometers were wrapped in top part of young caladium leaf—Nos. 1 and 3. Beside them another thermometer (No. 2) was suspended.

In a few moments Nos. 1 and 3 = 78°, and No. 2 = 80°.

The leaf of No. 1 was then tied against a stick, and the stalk cut off. In a short time the leaf wilted. Then the mercury rose until it stood nearly as high as No. 2. The leaf-enclosed thermometer (No. 3) registered lower than Nos. 1 and 2. See following tables.

| (Shade.) | 12:00 M. | 1:00 P.M. | 1:30 P.M. | 2:00 P.M. | 2:30 P.M. | 3:00 P.M. | 3:30 P.M. |
|---|---|---|---|---|---|---|---|
| (1) | 80° | 81° | 79° | 84° | 81° | 79° | 81° |
| (2) | 80° | 81° | 79° | 85° | 81° | 81° | 81° |
| (3) | 77° | 78° | 78° | 81° | 79° | 79° | 79° |
| | 4:00 P.M. | 4:30 P.M. | 5:00 P.M. | 5:30 P.M. | 6:00 P.M. | 7:00 P.M. | 9:30 P.M. |
| (1) | 82° | 81° | 79° | 78° | 77° | 74° | 72° |
| (2) | 83° | 82° | 80° | 79° | 78° | 75° | 73° |
| (3) | 81° | 80° | 79° | 78° | 77° | 74° | 71° |

*Experiment No. 27.*—August 15, 1879; 12:30 P.M.

Bulb of thermometer (1) wrapped in oleander leaf under surface out (exposed).

Bulb of thermometer (2) wrapped in oleander leaf (severed from tree) under surface out.

Bulb of thermometer (3) exposed to air.

Bulb of thermometer (4) wrapped in oleander leaf, upper surface out.

| | 1:00 P.M. | 2:00 P.M. | 2:30 P.M. | 3:00 P.M. | 3:30 P.M. | 4:00 P.M. |
|---|---|---|---|---|---|---|
| (1) | 75° | 75° | 76° | 76° | 77° | 78° |
| (2) | 75° | 79° | 80° | 80° | 81° | 84° |
| (3) | 80° | 82° | 82° | 81° | 82° | 85° |
| (4) | | 79° | 80° | 79° | 80° | (82°) |
| | 4:30 P.M. | 5:00 P.M. | 5:30 P.M. | 6:00 P.M. | 7:00 P.M. | 9:30 P.M. |
| (1) | 79° | 77° | 76° | 76° | 73° | 72° |
| (2) | 82° | 81° | 79° | 79° | 75° | 73° |
| (3) | 82° | 82° | 79° | 79° | 75° | 73° |
| (4) | 81° | 79° | 77° | 76° | 74° | 72° |

These experiments illustrate that, under the conditions herein stated, varying temperature prevailed within distances but slightly separated. They show that in these cases active vegetation reduced the temperature; that in this case an exposed under surface of oleander was in daylight cooler than the upper surface; that a leaf excised from the plant became about the temperature of the surrounding air. Taken together, the indications are that activity of evaporation prevailed herein in daytime from the under leaf surface, but that at night, perhaps due to surrounding vapor-saturated air, differences of temperature are (9:30 P.M.) nearly equalized.[1]

[1] This experiment should be repeated with oleander as well as other forms of vegetation. It is an interesting opportunity and is presented as a text I have never followed to a conclusion. I hesitate to even record it other than as a suggestive text that in a broad sense, or even repetition, may lead to very different conclusions.

**Establishing the Place of Water Excretion.**

The foregoing general experiments seem to show conclusively the importance of vegetation in dew production, as well as prove that vapor is eliminated under certain conditions and water under others. The following line of experiments was instituted to locate accurately the principal points of water excretion and to establish the amount excreted.

*Experiment No. 28.*—Capillary glass tube placed through a sheet of wax in one end of glass tube, and its expanded end against tip of orchard grass projected through wax (Fig. 10).

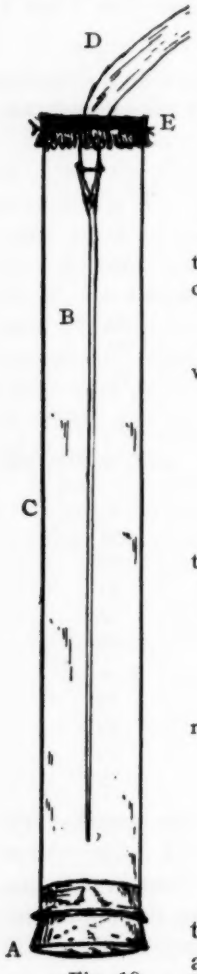


Fig. 10.

A—Cork in end of glass tube.
B—Capillary glass tube.
C—Glass tube.
D—Blade of orchard grass.
E—Sheet of wax over end of glass tube.

| | | |
|---|---|---|
| Weight, 8 P.M. | 1.80 | |
| 6 A.M. | 2.56 | |
| | | 0.76 |

Rain in the afternoon; very warm and close. Dew appeared on tips of grass 6 P.M.; thermometer 78°. This is exceptional. It was very cloudy until 9 P.M.; then clear.

*Experiment No. 29.*—August 18, 1880.

Two vials prepared with wax over the top and tip of grass through the wax (see Fig. 10).

| | | | |
|---|---|---|---|
| (1) | Surface of leaf painted with collodion | 8 P.M. | 0.50 |
| (2) | " " " " " " | 6 A.M. | 0.54 |
| | | | 0.04 |

*Experiment No. 30.*—August 5, 1880.

Two watch crystals filled with $CaCl_2$; one placed in a beaker and tied over with sheet rubber. Time, 7 P.M. to 7 A.M.

| | |
|---|---|
| Weight of watch crystal, etc., 7 P.M. | 138.70 |
| Weight of watch crystal, etc., 7 A.M. | 139.30 |
| | 0.60 |

*Experiment No. 31.*—One watch crystal placed in beaker, tied over with rubber, and blade of orchard grass stuck through rubber. Time, 7 P.M. to 7 A.M.

| | |
|---|---|
| Weight of crystals, etc., 7 P.M. | 158.60 |
| Weight of grass blade, 0.83 | |
| Weight of crystals, etc., 7 A.M. | 160.45 |
| | 1.85 |

*Explanation (Nos. 30 and 31).*—Experiment No. 30 shows that 0.60 gr. moisture was contained in the air; No. 31 that a blade of grass weighing 0.83 gr. excreted, in 12 hrs., 1.85−0.60 =1.25 gr. moisture, or twice its weight.

*Experiment No. 32.*—Watch crystals filled with $CaCl_2$. No. 1 in beaker glass of air, No. 2 in beaker glass with one blade of grass stuck through rubber; both glasses covered with sheet of rubber. Time, 7:30 P.M. to 7 A.M.

| | | |
|---|---|---|
| (1) | Crystal after exposure | 147.49 |
| | Crystal before exposure | 146.90 |
| | | 0.59 |

(2) Crystal after exposure..... 162.25
Crystal before exposure..... 161.00

1.25

Weight of grass blade, 0.50.

This (32) confirms No. 31, a blade of grass 0.50 gr. excreting 0.66; more than twice its weight. 1.25−0.59 = 0.66 gr. moisture.

*Experiment 33.*—August 5, 1880.

Watch crystals of chloride of calcium in beaker glasses from 7 P.M. to 9 A.M.

(1) Tied over with rubber, 9 A.M..... 146.63
7 P.M..... 146.00

0.63

(2) Tied over with rubber through which blade of orchard grass projected
9 A.M..... 162.13
7 P.M..... 159.60

2.53

Weight of grass blade, 0.93.

*Experiment No. 34.*—Watch crystal of $CaCl_2$ in beaker glasses from 7 P.M. to 7 A.M.

(1) Tied over with rubber, 7 A.M..... 141.50
7 P.M..... 140.24

1.26

(2) Tied over with rubber through which blade of orchard grass projected
7 A.M..... 198.90
7 P.M..... 196.76

2.14

*Experiment No. 35.*—Watch crystal of $CaCl_2$ in beaker glasses, from 8 P.M. to 7 A.M.

(1) Tied over with rubber, 7 A.M..... 136.7
8 P.M..... 135.8

0.9

(2) Tied over with rubber through which blade of orchard grass projected
7 A.M..... 186.33
8 P.M..... 184.10

2.23

*Experiment No. 36.*—Crystals of $CaCl_2$ in beaker glass tied over with rubber and blades of grass through each. 8 P.M. to 7 A.M.

(1) Orchard grass and beaker, weight, 7 A.M..... 194.50
weight, 8 P.M..... 191.44

3.06

Grass 2.18.

(2) Wire grass and beaker, weight, 7 A.M..... 138.33
weight, 8 P.M..... 136.20

2.13

Grass 1.06.

(3) Air in bell glass over plate of wax, 7 A.M..... 120.27
8 P.M..... 118.84

1.43

*Explanation.*—In this experiment the orchard grass (1) excreted $^1/_3$ more water than the wire grass, but it weighed twice as much. See Experiment No. 37.

*Experiment No. 37.*—Watch crystals of $CaCl_2$ in beaker glasses tied over with rubber and blade of grass through each. 7 P.M. to 7 A.M.

| | | |
|---|---|---|
| (1) | Orchard grass, weight, 7 A.M. | 176.50 |
| | weight, 7 P.M. | 173.58 |
| | | 2.92 |
| | Grass 0.94. | |
| (2) | Orchard grass, weight, 7 A.M. | 123.40 |
| | weight, 7 P.M. | 120.64 |
| | | 2.76 |
| | Grass 1.32. | |
| (3) | Air in glass over plate of wax, 7 A.M. | 136.62 |
| | 7 P.M. | 136.26 |
| | | 0.36 |

*Explanation.*—These two blades, differing in weight by $^1/_3$, excreted practically the same amount of moisture—one twice, the other three times its weight.

*Experiment No. 38.*—Watch crystals of $CaCl_2$ in beaker glasses tied over with rubber, a blade of orchard grass through each. 7 P.M. to 7 A.M.

| | | |
|---|---|---|
| (1) | Weight, 7 A.M. | 173.30 |
| | Weight, 7 P.M. | 171.84 |
| | Grass 0.65. | 1.46 |
| (2) | Weight, 7 A.M. | 135.43 |
| | Weight, 7 P.M. | 132.80 |
| | Grass 0.95. | 2.63 |

*Explanation.*—These two blades of grass excreted moisture—one twice, the other three times its weight.

*Experiment No. 39.*—Watch crystals of $CaCl_4$ in beaker glasses tied over with rubber. 7 P.M. to 7 A.M.

| | | | |
|---|---|---|---|
| (1) | Oleander leaf through it, | 7 A.M. | 185.80 |
| | | 7 P.M. | 182.26 |
| | | | 3.54 |
| (2) | Orchard grass, | 7 A.M. | 138.03 |
| | Grass 0.61 | 7 P.M. | 136.32 |
| | | | 1.71 |
| (3) | Over wax, | 7 A.M. | 111.68 |
| | | 7 P.M. | 111.48 |
| | | | 0.20 |

*Explanation.*—The oleander leaf (weight not given) excreted twice as much moisture as the grass blade.

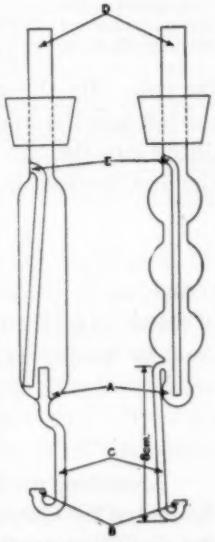
(*To be concluded next month.*)

# A SCRUBBER FOR AMMONIA DISTILLATES.*

BY A. G. MURRAY.

The possibility of error in the determination of nitrogen by the Kjeldahl method, owing to the mechanical carrying over of alkali from the distilling flask by the steam, is well recognized. Several types of spray traps have been devised to prevent this effect. For ordinary purposes these may be satisfactory, but where great accuracy is desired, as, for example, where very small quantities of ammonia are being estimated, many of these devices are not effective. This is particularly the case in the Devarda method for nitrates where the evolution of hydrogen causes a fine mist which carries alkali with it.

B. S. Davisson[1] devised a scrubber in which the vapors were passed through water before reaching the condenser. The device here described is merely a modification of the Davisson scrubber. In form it is like the McCoy boiling point tube.[2] It may also be considered as a modification of the device described by Sellier[3] for the estimation of volatile acids which was recommended by Hortvet[4] for the determination of volatile acids in wine and which is pictured on page 177 of the Methods of Analysis of the A. O. A. C.



Scrubber for ammonia distillates.

For use as a scrubber the tube is made sufficiently narrow to slip easily into the neck of a Kjeldahl flask. It is connected to a condenser by means of the usual form of Kjeldahl connecting bulb as an additional precaution.

The illustrations show two constructions and the operation of the device. In starting a distillation the pocket *A* and the reservoir *B* are filled with water. The steam carrying the ammonia enters the apparatus at *E* and, after passing through the water in the pocket *A*, escapes through *D* and the connecting bulb to the condenser. The small quantity of water condensing in the bulb falls back into the pocket *A* and overflows through the tube C. This tube must be long enough to prevent the steam from escaping through it.

The apparatus is automatic and therefore requires no attention on the part of the analyst from the time the distillation is begun until it is completed. The quantity of water through which the vapors are scrubbed is small and is continuously changing. The device is comparatively simple to make and is therefore inexpensive.

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* Contribution from Bureau of Chemistry, U. S. Department of Agriculture. Demonstrated at the "Stunt Show" of the Scientific Section, A. Ph. A. meeting at Asheville, N. C.

[1] *Journal of Industrial and Engineering Chemistry*, 11, 465, 1919.

[2] *Am. Chem. Jour.*, 23, 356, 1900.

[3] *Annales de chimie Anal.*, 6, 451, 1901.

[4] *Journal of Industrial and Engineering Chemistry*, 1, 31, 1909; *Bureau of Chemistry Bulletin*, 134, p. 76.

## APPARATUS FOR THE PRECIPITATION OF BARIUM SULPHATE.*

BY A. G. MURRAY.

As is well known, the determination of sulphate by means of barium is subject to serious errors unless certain precautions are observed in the precipitation. Among other things it is necessary to have the sulphate solution boiling and to add the barium chloride solution slowly and preferably hot. The device illustrated is intended to facilitate this operation.

Apparatus for precipitation of barium sulphate.

It consists of a cup the bottom of which is drawn out to form a capillary opening of such size as to permit water to pass through at the rate of 2 or 3 drops a second. Depressions in the broad rim allow the escape of steam from a flask in the neck of which the device is placed.

A capacious Erlenmeyer flask containing the sulphate solution is placed over a flame and when the solution boils the requisite amount of dilute barium chloride solution is poured into the cup. By this means the barium chloride solution is introduced slowly and boiling hot into the sulphate solution. When the cold barium chloride solution is introduced into the cup the condensed steam trickles to its point, thus greatly diluting the first drops of barium chloride solution which fall into the sulphate solution.

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## A NEW METHOD FOR THE PREPARATION OF STYRAX AND BALSAM OF TOLU FOR USE AS MICROSCOPIC MOUNTING MEDIA OF HIGH REFRACTIVE INDEX.

BY GEORGE H. NEEDHAM.

Mounting media of high refractive index are a necessity for the study of diatoms. As stated by Carpenter[1] "There is a marked increase of visibility in proportion as the mounting medium has a refractive index higher than the object mounted, . . . . . thus facilitating the discovery of obscure details."

Numerous substances have been used for this purpose ranging from styrax with a refractive index of 1.582 to artificial realgar with an index of 2.549.[2] The former, due to its resinous nature, has proved to be the best. To the writer's knowledge the majority of microscopists prepare styrax by just dissolving the commercial article in an organic solvent such as xylol or chloroform and filtering. Due to this quick method quite often a fine precipitate appears in the mount after several years. Balsam of Tolu, which has a higher refractive index of 1.618, has been discarded for this reason. In both cases, little thought seems to have been given to the complex nature of these two balsams and to the fact that the precipitate is either cinnamic or benzoic acid, or both.

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* Contribution from Bureau of Chemistry, U. S. Department of Agriculture. Demonstrated at the "Stunt Show" of the Scientific Section, A. Ph. A. meeting at Asheville, N. C., 1923.

[1] Wm. B. Carpenter, "The Microscope," London, 1891, p. 445.

[2] *Ibid.*, p. 1028.

It is necessary that the balsam used be examined carefully for adulteration. However, in the case of styrax nearly all of the commercial samples are adulterated. Therefore it should be light grayish brown in color, with an aromatic odor similar to benzoin, indicating oriental styrax (*Liquidambar orientalis*), and conform to the United States Pharmacopœial tests. Because of the scarcity of foreign styrax, American styrax (*Liquidambar styraciflua*) has been suggested and used as a substitute, due to its very similar composition. However, as yet the author has not used it in microscopic work.

For the reasons stated above and that quite recently[1] information was requested on the preparation of styrax for use as a mounting medium, the following simple method for preparing styrax and balsam of Tolu, practically free from cinnamic and benzoic acids and esters, is offered:

The styrax or balsam of Tolu is dissolved in warm absolute alcohol and filtered. The resultant liquid is poured slowly and with constant stirring into ten to twenty times its volume of distilled water. The precipitated resinous material is allowed to settle and the supernatant liquid decanted. The resins are freed as much as possible from adherent water and dissolved in alcohol again. The whole is poured into water as before. This process is repeated once more. Then the resins are in a fairly pure form and can be transferred to an evaporating dish and dried in a hot water oven. Finally the dried material is dissolved in sufficient chloroform so that the medium drops easily from a glass rod.

The prepared styrax or balsam of Tolu is used as follows: The diatoms on the cover glass or slide are cleared in xylol, the superfluous liquid drained off and two or three drops of the mounting medium added. The chloroform is volatilized by covering the slide with a small watch glass and keeping at 60° C. for half an hour. Then the mounting is finished as usual. However, after the cover glass is placed on the slide it is advisable to keep the mount at 60° C. for several hours. By doing this one may be sure that all of the volatile solvent has been driven off and hence secure the full benefit of the high refractive index.

The following refractive indices were determined after driving off the volatile solvent. The media were prepared by the method given. Water at 95° C. was run through the Abbé refractometer in order to melt the resin and secure contact between the prisms. The medium was then allowed to cool to 25° C. The indices given represent the average of four readings.

| | |
|---|---|
| Styrax. Sample No. 1 | Refractive Index 1.5595 at 25° C. |
| Styrax. Sample No. 2 | Refractive Index 1.5923 at 25° C. |
| Balsam of Tolu. No. 1 | Refractive Index 1.6035 at 25° C. |

These results show that the refractive indices of the resins compare favorably with those given for the commercial material.

After three years no precipitation has occurred in any of the diatom slides mounted with media prepared as above. Of course, further time is necessary before one can draw definite conclusions as to permanence.

COLLEGE OF PHARMACY,
UNIVERSITY OF WASHINGTON,
SEATTLE, WASHINGTON.

[1] *Nature*, London, Vol. 113, 2831, p. 159, 1924.

# CONCERNING A STANDARD FOR LIQUOR HYPOPHYSIS U. S. P. X.

BY ERWIN E. NELSON, PH.D.

## I. INTRODUCTORY.

The question of a suitable standard for the biological assay of pituitary extracts has been a matter of considerable concern for a number of years. Although the first methods of assay were not published until 1912, Schäfer and Herring (1) in 1908 expressed the view that air-dried samples of perfectly fresh gland, when pulverized and kept in a dry stoppered bottle, were stable. "Thus prepared it appears to retain its active properties for months and even years.* * * * * We have also used saline extracts of the dried material which have been previously extracted with absolute alcohol or with ether, but obtained no diminution in activity after these reagents." Chloroform was always added to the fresh material to prevent putrefaction. This belief in the permanency of the preparations was, as pointed out by Dale and Laidlaw (2), only a impression, and not established by quantitative experiments. The latter authors state that "it may be that ultimately a freshly prepared decoction of such dried material will prove to be the best standard of reference," but they did not believe that such a condition yet existed. They used as a standard "the extract prepared by boiling the perfectly fresh and finely pounded infundibular material with a definite proportion of acidulated water, so as to produce a ten per cent. or twenty per cent. extract of the fresh moist substance. The extract is then sterilized by brief autoclaving in small phials. Some activity is lost in autoclaving but the preparation thereafter has great stability."

The same year (1912) Hamilton (3) published the details of the pressor method of assay. The description of the standard employed is as follows: "The preparation used for the standard is the dried, defatted, powdered gland, which is a stable product. Of this powder 0.001 gram corresponds to approximately 0.02 gram of the fresh gland.* The solution for injection is made by rubbing 0.1 gram of the powder in a mortar with successive portions of acidulated water until the yield is 100 cubic centimeters. This solution should be filtered from the sediment. One cubic centimeter of this solution contains the standard test dose." In a later publication by Hamilton and Rowe (4), it is stated that a completely water-soluble powder prepared by a method devised by Aldrich had been substituted for the simple dried and defatted powder. This preparation, which is patented, is made by extracting the fresh glands by the use of glycerine, and then, after filtration, precipitating the soluble material by the use of alcohol and acetone. The dried precipitate is completely soluble in water. The process differs from those used later apparently only in that glycerine is used for extraction.

The use of any preparation of the pituitary gland itself as a standard is theoretically unsound. This fact led Roth (5) in 1913 to suggest the use of histamine as a standard, and in 1914 (6) this suggestion was amplified, and directions given which were afterward incorporated into the U. S. P. IX. The experience of a number of workers showed that this was unsatisfactory, and in 1918 Spaeth (7), working in the same laboratory, suggested the use of potassium chloride as a standard. This in turn did not prove satisfactory, and has not been used practically.

* In view of later work, the fresh extracts used in evaluating this powder undoubtedly were quite weak.

During the period covered by this work, the procedure in various manufacturing laboratories differed, practically none of them complying with the U. S. P. requirements either as to strength of finished preparation, or standard for assay. During this time at least one commercial laboratory to our knowledge was using a dried, defatted, preparation of the posterior lobe, similar to that suggested by Schäfer and Herring and later used in the method of standardization devised by Hamilton.

In 1923 Burn and Dale (8) described a method for obtaining a solution of the active substances from the perfectly fresh gland by a relatively simple process. Their work was carried out in an exceedingly careful manner, and seemed to demonstrate that under laboratory conditions it was possible to prepare extracts of uniform strength. The Sub-Committee on Bio-Assays of the Revision Committee of the U. S. P. X then recommended tentatively the adoption of the standard solution made according to the method of Burn and Dale as the standard of reference for the assay of commercial preparations. Burn and Dale emphasized the necessity for care in the process and called attention to the possibility of loss of activity. Since few of the manufacturers obtain the posterior lobes immediately on removal from the animals, there would be some difficulty in the practical preparation of the standard according to the directions given. The Sub-Committee believed, therefore, that for actual standardization some stable dried preparation of the posterior lobes should be used, to be evaluated in terms of the Burn and Dale standard and distributed by some central laboratory.

Through the courtesy of Dr. Hamilton and of Parke, Davis & Company, the water-soluble powder developed by Hamilton (not the patented preparation of Aldrich) was offered to the Sub-Committee, and was conditionally accepted. This powder, according to directions furnished by Dr. Hamilton, is made by precipitating the concentrated watery extract of the fresh glands by acetone in the presence of a specified amount of milk sugar. A very fine powder results, which is dried and used in this form. It is completely soluble in water, and according to Dr. Hamilton is stable over long periods.

In 1923 after this action had been taken, Smith and McCloskey published the details of their modification of the preparation of the dried defatted powder suggested earlier, and at the time in use in some of the commercial laboratories. They stop all enzymatic action at once on removal of the gland by dropping it into acetone and also use this substance as a dehydrating and defatting agent.* The final solution for use is made by extracting the dried, defatted, and powdered gland with acidulated water. A surprising degree of uniformity of strength of such solutions is claimed. This, if substantiated, would make unnecessary the use of the solution according to Burn and Dale, since the powder can be evaluated once for all, and then used as the final standard, rather than as an intermediary as originally contemplated by the Sub-Committee.

Through the courtesy of Dr. Hamilton, Dr. Smith, and Dr. Fenger, it has been possible to examine these dried powders, and also to prepare fresh ones for

* We are informed that it has been the routine commercial practice of some manufacturing laboratories to preserve the various glands used in making biological products in acetone. This practice, however, has not been recorded in any scientific journal so far as we have been able to discover.

examination. The details of these examinations, together with some data from other laboratories, form the material for the remainder of this paper.

## II. EXPERIMENTAL.*

Since this laboratory was without a direct access to a supply of fresh glands, Dr. Fenger was asked to supply certain preparations, the details of which follow. On October 21, 1922, a shipment of extracts in ampoules was received. The details of preparation of these extracts are quoted from a personal letter from Dr. Fenger.

"Each of the three lots made according to Dr. Dale's method represents forty glands, and the total amount of liquid in each case was 40 cc. The forty posterior lobes were carefully minced and mixed, and out of this mixture 4 grams were taken for the solutions.* * * * * * Lot No. 1 was made from strictly fresh glands. Immediately after removal from the sella turcica, the glands were placed in an enameled container surrounded by ice. After removal to the laboratory the posterior lobes were dissected out and minced by the aid of dissecting scissors. The time required for removal from the animals until the minced glands were covered with water for maceration was 35 minutes. The glands were extracted for one hour in distilled water at 18° C. After acidulation the liquid was heated according to Dale's directions, by immersing the flask in briskly boiling water for ten minutes. After chilling in ice water and filtration through paper the liquid was filled into ampoules. The ampoules were sterilized in boiling water for ten minutes for two consecutive days.

"Lot No. 2 was made as outlined above. The glands, however, were removed directly from the animal and placed at a temperature of 10° F. above zero for 18 hours before trimming and preparation. This lot should show the result of freezing, if any.

"Lot No. 3 was made from glands which were not chilled at all, but kept at room temperature (18° C.) for 18 hours before trimming. Here we should find a marked loss of activity if Dale's findings are correct.

"Lot No. 4 represents 10% pituitary liquid made from glands collected in the usual routine, macerated with acidulated water, and prepared by slow boiling as outlined in the present Pharmacopœia. The glands in this lot represent 3500 animals."

These preparations were assayed on the isolated uterus during the next few months. The results are of considerable interest, some of them being rather unexpected. The extract No. 4 was used as a standard. Placing its value at 100, the following comparative values were obtained:

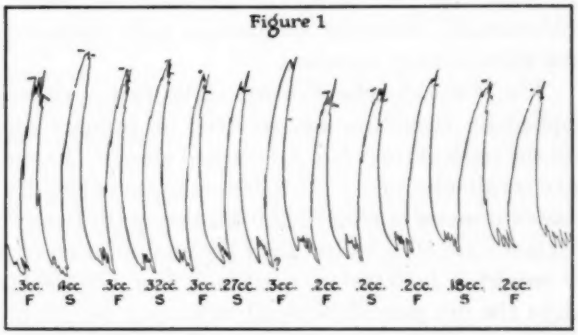
| | | | |
|---|---|---|---|
| No. 1 | 180–200 | No. 3 | 160–200 |
| No. 2 | 70– 90 | No. 4 | 100 |

It was of course to be expected that No. 1 should be the strongest, but the loss in activity of No. 2 which had been frozen, and the high strength of No. 3 which had been kept at room temperature for some time, are rather surprising. The explanation given by Dr. Fenger is as follows:

"The glands employed in preparing sample No. 2 were frozen in the whole form

* The author was assisted by Mr. Ferdinand R. Schemm in part of the experimental work.

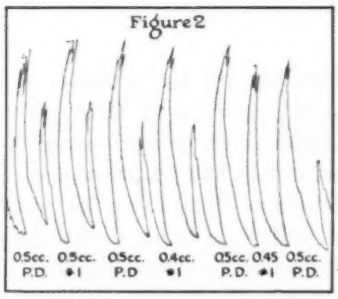
* * * * * The ice crystals formed in the glands tend to break down the cell walls, and render the active principle more available. When the glands are thawed out some of the active principle is dissolved in the melting ice. The pink serum which oozes out from the thawing glands contains the dissolved active principle. Since the liquid in this instance was derived from the entire gland we could not weigh it in as posterior lobe material. This explains the apparent loss in activity during the freezing process.* * * *




A comparison of the fresh extract according to Burn and Dale, with Smith's Extract D. F, the Burn and Dale solution made by Dr. Fenger, a 10% solution diluted 500 times. S, Smith's Extract D, a 5% extract, diluted 500 times. It can be seen that 0.2 cc. F = 0.2 cc. S, and while 0.32 cc. S is stronger than 0.3 cc. F, 0.27 cc. S is weaker than 0.3 cc. F.

"Sample No. 3 was made from fresh glands which had been kept at room temperature. * * * Weather conditions in the late fall (October 19) are not conducive to bacterial and putrefactive processes. Glands exposed to 18° for 18 hours will dry out considerably. The loss in weight and consequent increase in strength of the posterior lobes more than offset the deteriorating effect due to autolytic enzymes, possible bacterial activity, etc."

In connection with other assays to be noted later, this solution No. 1 from Dr. Fenger, a ten per cent. solution by the method of Burn and Deal, has been compared with a five per cent. solution made by Smith and McCloskey, which apparently differed in preparation only in that the fresh gland had been ground with sand instead of being cut up with scissors. The results of a number of comparisons showed that the five per cent. extract D had the same activity as ten per cent. extract by the Burn and Dale method (Fig. 1). The latter authors specifically state that their preparation does not possess the entire activity but only a constant fraction of it. Nevertheless the large discrepancy between the actual strength and the possible strength when somewhat better methods of extraction are used, would seem to make possible large errors. Smith and McCloskey in making up the Dale solution, found that successive preparations did not agree in strength. Most important of all, Dr. Dale himself, in a recent letter to the Chairman of Sub-Committee III, expressed the view that the standard is impractical, and in response to a request for permission to quote him, he makes the following statement in a letter to the author:




2/5-24. The original water-soluble powder received from Dr. Hamilton (PD), against the 10% solution according to Dale, from Fenger (No. 1). 1 cc. of each = 1:2,500,000 dry weight. The powder is practically the equivalent of dry gland. Or 1 mg. powder = 5 mg. fresh gland, as judged by this assay.

"* * * * our own experience gave such uniform results when we took pains to keep the conditions constant, that I hoped that others would adhere to our elaborately detailed description and obtain similar uniformity. Experience has proved that this hope was not justified."

These considerations of course make the use of the fresh extract as a standard problematical, either for comparison with commercial extracts directly or through some intermediary standard.

*The Water-Soluble Powder.*—The first specimen of the water-soluble powder supplied by Hamilton was received in January 1923. It was compared at once with the fresh extract No. 1 discussed above. Experimentally it was found that one cubic centimeter of a 1:2,500,000 dilution of the dry powder was equivalent to one cubic centimeter of a 1:500,000 dilution of the fresh 10% extract. If one assume that the glands are 80% water, then the final dilution of the gland substance in terms of dry weight is $1/50{,}000 \times 1/10 \times 1/5 = 1/2{,}500{,}000$. In other words, weight for weight the dry powder is equal to its own weight of dry gland. One year later the same powder was assayed against the same extract and the same value again found (Fig. 2). A sample of the powder was sent to Mr. E. E. Swanson, and using a Dale solution as a standard, he obtained the same values.

TABLE I—SUMMARY OF DATA ON THE STRENGTH OF THE ORIGINAL WATER-SOLUBLE POWDER, IN TERMS OF FRESH GLAND.

| Determined by | | Standard. | Value. |
|---|---|---|---|
| Hamilton | | Fresh gland extract | 2.5 times fresh gland |
| Smith | 1923 | Fresh extract D | 1.8 times fresh gland |
| Nelson | 1923 | Fresh extract D | 2.0 times fresh gland |
| Nelson | 1923 | Dale standard | 5.0 times fresh gland |
| Nelson | 1924 | Dale standard | 5.0 times fresh gland |
| Swanson | 1924 | Dale standard | 5.0 times fresh gland |
| Anderson | 1923* | ~~Dale standard~~ ? | 2.5 times fresh gland |

* Personal communication.

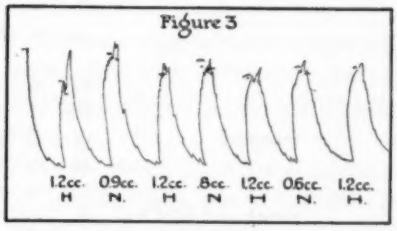
But this strength is twice that claimed by Hamilton for the powder, who states that 2% solution of the powder corresponds to a 5% solution of fresh gland. Smith examining the same sample found that one milligram of the powder was equal to 1.8 milligrams of fresh gland, and the author working in the Pharmacological Laboratory of the Bureau of Chemistry during the summer of 1923, using the Smith extract D as a standard, found essentially the same values as those reported by Smith, namely, that one milligram of the powder was equal to two milligrams of fresh gland. These various values are tabulated in Table I. It will be seen that there are two groups of values. When assayed against the Dale standard, the powder is twice as strong as when assayed against other extracts of fresh glands. The explanation for the discrepancy of course has already been given above, in that the extract according to Dale used here, and presumably also that of Swanson, was actually only half as strong as extracts made by other methods.

These findings of themselves offer no objection to the use of the water-soluble powder, but rather to the use of the Burn and Dale solution as a standard, either as the final standard or as a means of evaluating other powdered preparations. If it could be shown that the water-soluble powder was constant in strength in successive preparations, and was stable, it might still be used. Dr. Hamilton himself does not seem to hold to the view that such preparations are uniform in strength, since in the

first draft of the method of preparation sent to the Chairman of the Sub-Committee III, it is stated that "it is recommended that the powder be tested in comparison with the solution, since losses can always occur, and are not always avoidable.* * * * The resulting powder can be assayed against Dale's solution, and can be adjusted to any desired ratio of activity."

As a matter of fact, the preparation of this powder made in this laboratory, by the above-mentioned directions, is twice the activity of the most recent powder supplied by Dr Hamilton himself (Fig. 3). This recent powder from Hamilton in turn has been found in this laboratory to be weaker than the original specimen.

Figure 3

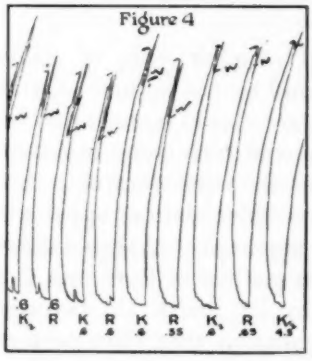



3/4–24. A comparison of the recent water-soluble powder received from Dr. Hamilton (H) with one prepared here (N). Both are in a 1:25,000 dilution. It is seen that 0.6 cc. N = 1.2 cc. H or that N is twice as strong as H.

The admitted lack of uniformity in the strength of the successive preparations of the water-soluble powder, and the impracticability of the use of the Burn and Dale standard solution of pituitary, has impelled the author to withdraw the earlier recommendation to the U. S. P. Sub-Committee III.

*The Desiccated, Defatted, Powdered Posterior Lobe.*—The pituitary powders made by acetone dehydration and defatting have been somewhat extensively examined. There have been available, through the courtesy of Dr. Smith, samples of his powders $A_2$, $H_2$, $K_2$. These powders were compared with each other in the Pharmacological Laboratory of the Bureau of Chemistry, and were found to be equal in activity. Two specimens of the powder have been prepared from material furnished by Dr. Fenger. These preparations, Fe and Re, have been compared with $K_2$, and found to have the same activity (Fig. 4). It was also found, working in the Washington Laboratory, that one milligram of $A_2$ was the equivalent of 6.4 milligrams of fresh gland, as represented in Smith's extract D. Recently Swanson (10) has published the results of examination of three such powders which he has prepared, his powders G, H, and I. The values which he gives are as follows:

Figure 4




1/4–24. A comparison of two preparations of the dried defatted posterior lobe. $K_2$, powder from Smith. 1 cc. = 1:100,000. Re, powder made by Nelson according to Smith's direction, 12/17–23. 1 cc. = 1:100,000. 0.6 cc. $K_2$ = 0.55 cc. Re., or $K_2$ is approximately equal to Re.

1 mg. G = 6.7 mg. fresh post. lobe
1 mg. H = 6.6 mg. fresh post. lobe
1 mg. I = 6.8 mg. fresh post. lobe

These figures are in close agreement with those given by Smith and McCloskey. All of the above data are summarized in Table II.

Because of the uniformity shown by the various preparations of the desiccated, defatted and powdered posterior lobe, and the resultant lack of necessity for standardization against fresh solutions, it is believed that the use of this preparation offers the best standard for the assay of commercial pituitary solutions.

TABLE II.—SUMMARY OF DATA ON THE COMPARISONS OF THE DESICCATED, DEFATTED, POWDERED POSTERIOR LOBE.

| Determined by | Preparation. | | Value. | Source of Preparation. |
|---|---|---|---|---|
| Nelson | $A_2$ | = | $H_2$ | Smith |
| | $A_2$ | = | $K_2$ | Smith |
| | $A_2$ | = | 6.4 mg. fresh gland (Extract D) | Smith |
| | Fe | = | $K_2$ | Made by Nelson |
| | Re | = | $K_2$ | Made by Nelson |
| Swanson | G | | 6.7 × fresh gland | Made by Swanson |
| | H | = | 6.6 × fresh gland | Made by Swanson |
| | I | = | 6.8 × fresh gland | Made by Swanson |
| Smith and McCloskey | $A_2$ | = | 7.2 × fresh gland | |
| | $C_2$ | = | 7.2 × fresh gland | |
| | $E_2$ | = | 6.7 × fresh gland | |
| | $F_2$ | = | 6.7 × fresh gland | |
| | $G_2$ | = | 7.5 × fresh gland | |
| | $H_2$ | = | 7.4 × fresh gland | |

*Absolute Value of the Final Standard.*—The Pharmacopœial requirement as to strength of finished extract ought of course to conform to the average of accepted commercial practice. The author published in 1923 (11) the results of a number of comparisons of the various commercial extracts obtained on the open market, in terms of one of them. The results showed that there is a very large variation in commercial preparations, even among those which are said to be of the present U. S. P. strength. It is, therefore, very difficult to arrive at any figure for the average. However, it was recommended to the U. S. P. Sub-Committee III that there be adopted a standard representing a five per cent. extract in terms of the Burn and Dale solution.

In April 1923 Smith and McCloskey (9) reported a similar series of assays, finding about the same degree of variation as that found by the author. On the basis of their studies they recommended that the standard should be such that one cubic centimeter of the finished Liquor Hypophysis should correspond in activity to four milligrams of their powder, which in turn was the equivalent of a three per cent. fresh extract as they prepared it. The two recommendations apparently are not in accord. The discrepancy, however, is only apparent. As stated above, when the ten per cent. solution made according to the method of Burn and Dale was compared with the five per cent. solution made by Dr. Smith, the two were found to have the same activity. The earlier recommendation, that a five per cent. solution be used as a standard (which recommendation was made on the basis of experiments with this ten per cent. solution), therefore corresponds actually to a two and one-half per cent. solution by Smith and McCloskey's methods. The difference, then, in the early recommendation of the author to the Sub-Committee and that of Smith and McCloskey, is that between a two and one-half per cent. and a three per cent. solution, respectively. It is quite interesting that so nearly the same approximation of the average of commercial practice should be reached by two independent laboratories. In order to avoid the use of fractional terms, it has been recommended to the Sub-Committee on Bio-Assays that the strength of the finished solution should be such that one cubic centimeter of the commercial extract should have the same activity as that yielded by four milligrams of the dried, defatted, powdered gland.

### III. SUMMARY.

The solution of fresh posterior lobe according to the method of Burn and Dale has not proved satisfactory in practical use as a standard for the assay of Liquor Hypophysis.

The water-soluble powdered preparation of pituitary glands made by precipitating the concentrated solution of the active principles with acetone is not uniform from preparation to preparation, and therefore requires standardization itself before being available for use as a final standard.

The dehydrated, defatted, powdered preparation made from fresh posterior lobes apparently is uniform from preparation to preparation. It is suitable for use as a standard. Its adoption has, therefore, been recommended.

It also has been recommended that the U. S. P. X require that the finished commercial preparation of Liquor Hypophysis be of such a strength that one cubic centimeter correspond in activity to that yielded by four milligrams of the dried, defatted, powdered gland.

The author wishes to express his appreciation to Dr. H. C. Hamilton, Dr. M. I. Smith, and especially to Dr. Frederic Fenger for the many courtesies extended to him.

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## PRELIMINARY REPORT ON THE EFFECT OF FATTY ACIDS ON LINIMENTS AND EMULSIONS.*[1,2]

BY E. V. KYSER AND FRANK C. VILBRANDT.

In presenting this subject we have made no attempt to determine the critical points of emulsification. The two liniments which we have selected, lime and ammonia, are emulsions, or attempts at emulsions, depending upon the percentage of fatty acids in the oils from which they are made. For convenience we shall refer to them as emulsions. It is our purpose to point out, as they occur to us, certain phases of the effect of fatty acids on emulsions. The Pharmacopœia has no standard for the percentage of free fatty acids which U. S. P. fixed oils may contain and many operators have difficulty in preparing good emulsions by using U. S. P. methods. We believe that some standard for the percentage of free fatty acids of oils

* Scientific Section, A. Ph. A., Asheville meeting, 1923.

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[2] Samples of emulsions were made by J. E. Johnson, Ph.C., student at the University of North Carolina.

should be defined and that a more convenient and easy method for making uniform and stable emulsions should be adopted.

The question frequently asked in connection with these emulsion liniments is "why does an old oil produce the best liniment?" The answer usually given to this question is: "an old oil contains free fatty acids which unite with the alkali to form a soap thereby producing an emulsion." This answer can be accepted within certain limits, but applied generally it is erroneous.

The purpose for which a preparation is to be used should, in a measure, determine its composition. In the ninth revision of the Pharmacopœia we have lime and ammonia liniments which are emulsions, if the percentage of free acids in the respective oils used is present in sufficient amounts to form the required quantity of soap to emulsify its oils. These two liniments are used for purposes which are entirely different, and the percentage of free acid in the oils from which they are made seriously affects the physiological value of one and the physical consistency of the other.

Just why the formula for lime liniment was introduced, by the iron workers of Carron, for the treatment of burns is not known, but we may be safe in assuming that this formula of linseed oil and lime water was adopted for three reasons: first, linseed oil of good quality and low in free acid was easily obtained in the vicinity; second, the lime water contains sufficient $Ca(OH)_2$ to neutralize the small amount of free acid, forms an emulsion and it affords a slightly alkaline medium; third, linseed oil is a drying oil which when oxidized forms a film. This film excludes air and acts as a protective coating. We know that sodium bicarbonate, which is slightly alkaline, is beneficial in the treatment of burns, and that a paraffin dressing which excludes air was found, during the recent war, to be very efficacious for this purpose.

If we accept these reasons for the use of linseed oil and lime water as a treatment for burns, then the use of an old oil would seriously affect the physiological value of the liniment. The free acid present in a greater quantity than that which is neutralized by the $Ca(OH)_2$ has no physical effect upon the emulsion. This is shown by the table of viscosities and rate of separation of emulsions made from mineral oil and Wesson oil to which we have added various amounts of oleic acid. However, this excess of free acid does afford an acid medium which is not to be desired because it is irritating.

In the case of unsaturated oils the presence of a high percentage of free acid usually denotes rancidity. This is not always true; an oil may be high in acid and not be rancid. Rancidity is usually defined as a state of decomposition in which oxidation has taken place. If oxidation (rancidity) has taken place, then we may expect that the drying value of the oil has been diminished and the property of forming a protective film accordingly decreased. Then by using an old oil we have again defeated the purpose for which the liniment was intended.

There is a vast difference between the physical consistency of an ammonia liniment made from a neutral oil and one made from an oil which is high in free acid. If a neutral oil is used, no emulsion is formed; as the percentage of acid is increased, better emulsions ensue until we reach seven per cent., when we have a semi-solid mass which is too viscous to pour. We have prepared a number of ammonia liniments from Wesson, cottonseed, sesame and linseed oils purchased on

the open market; also, liniments from Wesson and mineral oils to which had been added from one to seven per cent. of oleic acid. The oils bought on the open market containing between two and five per cent. of free acid made good emulsions. The neutral Wesson oil formula gave a cloudy mixture which separates completely in one hour. Wesson oil and mineral oil, to which have been added from two to five per cent. of oleic acid, gave good emulsions; above five per cent. the emulsion became semi-solid. The eighth revision of the Pharmacopœia directs that ammonia liniment be made from cottonseed oil and oleic acid. The percentage of oleic acid was three per cent. of the total emulsion. This formula will produce a good emulsion of proper consistency provided the original oil from which it is made is neutral. However, if the oil should contain four per cent. of free acid, then the addition of three per cent. of oleic acid will produce a semi-solid mass. You can well imagine the embarrassment of the pharmacist who dispenses Ammonia Liniment U. S. P. made from a neutral oil and then refills the order with a liniment made from an oil which contains seven per cent. of free acid. It may be that this occurrence of irregularity in the consistency of the liniments caused the deletion of this formula in the ninth revision of the Pharmacopœia and the adoption of the present sesame oil formula. However, the percentage of free acid in sesame oil varies and we will continue to have this inequality arise from time to time until the Pharmacopœia adopts a standard for an edible oil and then directs the required amount of oleic acid to be used.

Edible oils are comparatively cheap, and if kept in glass-stoppered bottles and protected from light and air, they will remain unchanged for a long period of time. If we adopt an edible oil standard, then any oil which is neutral can be used and the resulting liniments will be uniform and comparatively permanent.

In an endeavor to determine if good emulsions of fixed oils, for internal use, could be prepared—in which such substances as acacia, tragacanth, Irish moss and like emulsifying agents are eliminated—we made a number of experiments, using sodium hydroxide, sodium silicate, various oils bought on the open market, and also Wesson and mineral oils to which we added various amounts of oleic and lactic acids. Our results show that good emulsions can be made by using sodium hydroxide and sodium silicate in the presence of free fatty acids of high molecular weight. Other bases, such as sodium and potassium carbonates and potassium hydroxide, will produce results which are similar. Lactic acid and other fatty acids of low molecular weight will not form an emulsion in the presence of alkali and oil. The sodium lactate formed separates in tiny crystals which tend to break the emulsion.

In view of the fact that various operators have experienced difficulty in making emulsions in which acacia and like emulsifying agents are used and that the oils from which these emulsions are made contain free acids in various amounts—we believe that a solution of these difficulties lies in the use of neutral oils to which has been added the required amount of oleic acid and some alkali which will produce a water-soluble soap as the emulsifying agent. We recommend oleic acid because it can be obtained in a pure state on the open market and because its sodium and potassium salts are good hydrating agents. Emulsions made by using these ingredients are easy to produce and usually permanent. The soap and emulsions are formed simultaneously and if separation should occur reëmulsification can be effected by a slight agitation.

It is a well-known fact that water-soluble soaps are very efficient agents for emulsifying fixed oils, essential oils and other substances which are immiscible with water. That such emulsifying agents have not been widely used is probably due to the erroneous popular conception of soaps. They are conceived to be detergents made from materials of questionable source, which are decidedly unfit for internal use. If we consider that many of the oils used in making emulsions for internal use contain free acids, then it is a matter of choice between administering neutralized fatty acids (soaps) or free acids as such. There is no question about the irritating nature of free fatty acids and their chemical activity is proved by the fact that they will combine with alkaline salts, alkaline earths and various metallic compounds. Emulsions in which such substances as acacia is employed are, aside from containing free acid and being difficult to manipulate, subject to fermentation. This fermentation presents a condition which has a tendency to break the emulsion, split the oil, liberate more free acid and cause subsequent decomposition which usually occurs when fermentation takes place.

This popular aversion to the use of soaps for internal use can probably be overcome by referring to the soaps by their chemical names, such as potassium and sodium oleates or the metallic salts of the higher acids of the paraffin series. No objection has been made to the use of sodium oleate as an internal remedy for the treatment of gall stones. If we study the process of digestion, we find that the emulsification of fats in the intestines is caused by the soap formed from the action of sodium or potassium compounds on the free fatty acids. This splitting of fats, by hydrolysis in the presence of the enzymes of the pancreatic juice, is probably carried just far enough to liberate sufficient fatty acids to form the required amount of soap necessary to emulsify the residual fat. Some authorities state that the neutral fat is completely split into fatty acids and glycerol. This is doubtful in view of the time required to completely split fats by the use of live steam and such effective catalytic agents as sulphonated oils. If the total fat consumed were completely split into fatty acids then the fatty acids would be assimilated as sodium or potassium salts and in order to convert these fatty acids into neutral fats, as we find them in the tissue, it would be necessary to break up these soaps and the liberated fatty acids would have to recombine with a glycerol radical. This seems to us a very unusual chemical procedure. Dr. Jean Effront states that the pancreatic juice acts upon fats as a saponifying and an emulsifying agent. The emulsion is produced by the pancreatic juice, owing to the alkaline reaction and to the viscosity of the liquid and not by the action of the enzyme contained therein. The pancreatic juice as well as the products of maceration of the pancreas contain relatively little of the enzyme and the saponification of the substance is always incomplete.[1] Martin H. Fisher, in conjunction with Miss M. O. Hooker, in the discussion of the physical chemistry of emulsions points out that fatty degeneration or fatty filtration is a condition where the fat has become visible or a physical change in which the emulsion has been broken. He draws an analogy between the breaking by acid of a seven per cent. solution of a potassium soap and cottonseed oil with the breaking of a 25% emulsion of fat and liquid which he calls the brain.[2] Whether soap is present in milk as the emulsifying agent or aids in emulsification will also be considered later in connection with the critical points of emulsification by the use of soaps as the medium.

If the theory of Fisher that fats in tissue are held in a state of emulsion is true,

then we have reason to believe that the water-soluble soap formed in the intestines is the emulsifying agent or aids in the emulsification of fats that occur both in the tissue and in milk.

VISCOSITIES OF EMULSIONS.

Modified Sprengel Viscometer 20° C.

| | No. | Composition. | Viscosity (in seconds). | Separation of components. |
|---|---|---|---|---|
| A | 1. | Lime Liniment + Mineral Oil + 1% Oleic Acid | 39.0 | 1 hour |
| | 2. | Lime Liniment + Mineral Oil + 2% Oleic Acid | 38.5 | 1 hour |
| | 3. | Lime Liniment + Mineral Oil + 5% Oleic Acid | 38.0 | 1 hour |
| | 4. | Lime Liniment + Mineral Oil + 7% Oleic Acid | 39.5 | 1 hour |
| | 5. | Lime Liniment + Mineral Oil + 10% Oleic Acid | 38.5 | 1 hour |
| B | 6. | Lime Liniment + Wesson Oil | 60.5 | 2 minutes |
| | 7. | Lime Liniment + Sesame Oil | 223.0 | +++ |
| | 8. | Lime Liniment + Linseed Oil | 227.0 | +++ |
| | 9. | Lime Liniment + Cottonseed Oil | 301.0 | 48 hours |
| C | 10. | Ammonia Liniment + Mineral Oil + 1% Oleic Acid | 23.5 | +++ |
| | 11. | Ammonia Liniment + Mineral Oil + 2% Oleic Acid | 24.5 | 48 hours |
| | 12. | Ammonia Liniment + Mineral Oil + 5% Oleic Acid | 63.0 | +++ |
| | 13. | Ammonia Liniment + Mineral Oil + 7% Oleic Acid | Too heavy | +++ |
| | 14. | Ammonia Liniment + Mineral Oil + 10% Oleic Acid | Too heavy | +++ |
| D | 15. | Ammonia Liniment + Wesson Oil + 1% Oleic Acid | 30.5 | 5 hours |
| | 16. | Ammonia Liniment + Wesson Oil + 2% Oleic Acid | 57.5 | +++ |
| | 17. | Ammonia Liniment + Wesson Oil + 5% Oleic Acid | 275.0 | +++ |
| | 18. | Ammonia Liniment + Wesson Oil + 7% Oleic Acid | Too heavy | +++ |
| E | 19. | Lime Liniment + Wesson Oil + 1% Oleic Acid | 30.0 | +++ |
| | 20. | Lime Liniment + Wesson Oil + 7% Oleic Acid | 33.0 | 48 hours |
| F | 21. | Ammonia Liniment + Wesson Oil | 60.0 | 1 hour |
| | 22. | Ammonia Liniment + Sesame Oil | 40.0 | +++ |
| | 23. | Ammonia Liniment + Linseed Oil | 45.5 | +++ |
| | 24. | Ammonia Liniment + Cottonseed Oil | 30.5 | +++ |
| G | 25. | Mineral Oil + 1% Oleic Acid + 1% $Na_2SiO_3$ | 47.0 | +++ |
| | 26. | Mineral Oil + 2% Oleic Acid + 2% $Na_2SiO_3$ | 30.0 | 24 hours |
| | 27. | Mineral Oil + 5% Oleic Acid + 5% $Na_2SiO_3$ | 252.0 | 24 hours |
| H | 28. | Cottonseed Oil + 3% $Na_2SiO_3$ | 24.5 | 5 hours |
| | 29. | Cottonseed Oil + 5% $Na_2SiO_3$ | 60.5 | 6 hours |
| J | 30. | Wesson Oil + 1% Oleic Acid + 1% $Na_2SiO_3$ | 30.5 | 15 hours |
| | 31. | Wesson Oil + 2% Oleic Acid + 2% $Na_2SiO_3$ | — | 24 hours |
| K | 32. | Wesson Oil + 2% Oleic Acid + 2% $Na_2SiO_3$ | 30.0 | 48 hours |
| | 33. | Wesson Oil + 5% Oleic Acid + 5% $Na_2SiO_3$ | — | 48 hours |
| L | 34. | 45% Wesson Oil + 5% Oleic Acid + 1.2% $Na_2SiO_3$ | 27.5 | 48 hours |
| | 35. | 45% Wesson Oil + 5% Oleic Acid + 0.6% NaOH | 18.0 | 2 hours |
| | 36. | 45% Wesson Oil + 5% Lactic Acid + 1.2% NaOH | Seps. before run | 3 seconds |
| | 37. | Emulsion of Sesame Oil + Acacia | 59.5 | +++ |
| | 38. | Emulsion of Cottonseed Oil + Acacia | 117 | +++ |
| | 39. | Emulsion of Wesson Oil + Acacia | 133 | +++ |
| | 40. | Emulsion of Linseed Oil + Acacia | 91 | 6 hours |
| | 41. | Emulsion of Mineral Oil + Acacia | 230 | +++ |

+++ Preparations thus marked showed no separation at end of 72 hours.

It seems evident from the tables of viscosity and rate of separation that there is a limit to the amount of sodium silicate which can be added as an emulsifying

agent. We had difficulty in arriving at true viscosities because of the separation of some of the emulsions during the time of running and the interference of external adhesion. We reduced this effect to a minimum, as far as we were able, by the use of a specially constructed viscometer using a water-jacketed 100-ml. pipette.

*Discussion of Result.*—It is evident from a survey of Series A(1–5) that an increase of oleic acid content beyond that which is neutralized by the lime in which there is no increase in the amounts of calcium oleate formed, does not influence the internal cohesion and external adhesion of the mixture. The outside influence of rapidity in separating into watery and oily components easily overshadows any influence increasing amounts of calcium oleate may exert. This statement is verified in Series C (10–14) wherein a more perfect emulsion results with ammonia than with lime and an increasing amount of ammonium oleate increases the viscosity. The internal cohesion of the particles of the emulsion overbalances the external adhesion. The emulsion leaves glass surface fairly clean. To begin with, an ammonium oleate mixture flows very freely in the presence of a mineral oil but slight increases in the oleate rapidly increase the internal cohesion of the particles.

Substituting Wesson oil for the mineral oil a much higher viscosity results when compared with those mixtures containing the same percentage of oleates. (Compare Series D and C.) This increase is due to an increase in the external adhesion of the mixture, due to the presence of Wesson oil. In the case of the lime oleates with Wesson oil (see Series E) a reduction in viscosity results, due to a counteracting influence of the external adhesiveness of the particles and their internal cohesion, yielding a more or less watery or free-flowing product.

Comparing Series B and F, liniments of lime and ammonia, using various oils, Wesson, cottonseed, linseed and sesame, we obtain an insight into the difference in physical properties of the ammonium and calcium oleates. Calcium oleates show a lessening effect on the viscosity, but the presence of much free vegetable oil greatly increases the viscosity due to external adhesion.

That mineral alkalis other than ammonium and calcium can be used is shown by the fact that additions of small amounts of sodium silicate produce some very fine emulsions (Series C to K, inclusive). There is a maximum amount of oleic acid that can be added to sodium silicate and mineral oil that will increase the viscosity of the mass.

Sodium silicate itself having a high external adhesiveness will increase the viscosity with increasing amounts of the silicate. On the whole the results with sodium silicate do not compare as favorably as those with ammonia, since the stability of the emulsions in the latter case is much greater. (Compare G, H, J, with C, D.)

Straight oil emulsions with acacia have a good stability, the internal cohesion and the external adhesion being much higher than the general run of the other series.

Lactic acid cannot be substituted for oleic acid, since it does not give a soap, the calcium lactate formed separating in tiny crystals and tending to break up the emulsion. The presence of a small amount of soap protects the colloids and gives a more stable emulsion.

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# NOTES ON AMYL NITRITE.*

BY L. F. KEBLER AND W. F. KUNKE.[1]

Information on the flash point of a specimen of amyl nitrite, labeled U. S. P., was requested by the Mail Division of the Post Office Department.

The boiling temperature for amyl nitrite is generally given as 96° to 99° C., this range being prescribed in the U. S. Pharmacopœia, 7th revision. A preliminary test made with the sample submitted showed that the flash point was much lower than had been expected. Another supply of the same brand of amyl nitrite was then cooled with a freezing mixture and at this low temperature introduced into the flash point apparatus. The flash point taken immediately showed that the article flashed at 3° C. (37° F.). How much lower it would flash was not determined. The Postal Regulations deny the use of the mails to inflammable materials, such as gasoline and denatured alcohol, "and all liquids having a flash po nt at or below 80° F."

From this observation it was believed that some products with boiling points lower than that of the generally recognized amyl nitrite must be present. This drug generally complies with the present Pharmacopœial requirements.

Two different makes were submitted to fractional distillation with the following results:

| Brand 1: | | |
|---|---|---|
| ° C. | Cc. | Per cent. by volume. |
| 68–81 | 3.5 | 5.4 |
| 81–88 | 11.5 | 17.7 |
| 88–97 | 30.0 | 46.2 |
| 97–102 | 6.0 | 9.2 |
| Residue and loss | 14.0 | 21.5 |
| Brand 2: | | |
| 71–81 | 2.5 | 5.5 |
| 81–89 | 10.0 | 22.2 |
| 89–96 | 15.0 | 33.3 |
| 96–102 | 11.0 | 24.4 |
| Residue and loss | 6.5 | 14.6 |

From this range of temperatures it is evident that the amyl nitrites tested contain considerable quantities of substances boiling below and above the recognized boiling range for amyl nitrite. To what extent such mixtures would differ therapeutically from amyl nitrite boiling within a definite recognized range is a matter that should be considered.

The subject of amyl nitrite was so thoroughly considered historically, chemically, and industrially by Frank O. Taylor[2] that we can do no better than to refer the reader to that exhaustive communication. We desire however, to quote two portions of his summary: "1. That the character of amyl nitrite on the market today is, as a whole, mediocre, with a little very good and other small part very bad. 2. That with proper care first-class amyl nitrite may be made commercially."

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* Presented at the Asheville meeting, 1923, Scientific Section.

[1] Bureau of Chemistry, U. S. Department of Agriculture.

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# HYPOCHLORITE SOLUTIONS.

BY RUTH M. DAVIS AND H. A. LANGENHAN.

(*Continued from p. 330, April* JOURNAL A. PH. A.)

(NO. 5) APPENDIX.

The popularity of inorganic hypochlorite solutions has resulted in the introduction of these under special trade names. This is also true of the "chloramine" type of compounds. Hence a glossary of such titles as could be found seems desirable and is here appended. It is divided into (1) organic chlorine antiseptics; (2) inorganic chlorine antiseptics; and (3) pharmacopœial synonomy for Labarraques Solution.

## 1. ORGANIC CHLORINE ANTISEPTICS.

*Chloramine-T.*—"The abbreviated name for sodium paratoluene sulphonchloramide. It is water-soluble."

*Dichloramine-T.*—"A still more powerful antiseptic than chloramine-T, having both hydrogens of the amino group of the toluene sulphonamide replaced by chlorine. This is not water-soluble but is used in oil solution."

*Chlorazene.*—"A trade name for chloramine-T." (N. N. R. 1922.)

*Chlorolyptus.*—A chlorinated eucalyptus oil containing 30 per cent. chlorine in relatively stable combination. Claimed to be a new chlorinated antiseptic. According to A. M. A. Chem. Laboratory, Chlorolyptus is a feeble antiseptic. (Y. B. 1920.)

*Lysochlor.*—Dichlorebenzene rendered soluble by soap. It is used in a 5 per cent. solution as a disinfectant of wounds. (Y. B. 1918.)

*Halazone.*—Parasulphonedichloramidobenzoic acid. (N. N. R. 1922.)

## 2. INORGANIC CHLORINE ANTISEPTICS.

*Antiformin.*—A strong alkaline solution of sodium hypochlorite prepared by treating chlorinated lime with soda, filtering off the sodium hypochlorite and adding sodium hydroxide to the filtrate. (Y. B. 1914.)

*Caporit.*—Formerly hyporit, according to Herzog a freshly prepared solution containing 40.3 per cent. available Cl, after 10 days 37.8 per cent., after 3 months 34.8 per cent. Solution was not well stoppered. Ordinary cork used. (Y. B. 1920.)

*Chlorax.*—A stable solution of chlorine, according to literature from Cl. Prod. Co. Analysis given as free chlorine 0.030%, lithium chloride 0.035%, calcium hydrate 0.010%, opium 0.016% and ethyl alcohol 0.078%. (Trade Literature.)

*Chloron.*—A stable solution of chlorine according to literature from Cl. Prod. Co. Analysis given as free chlorine 0.200%, calcium chloride 0.190%, mercurous chloride 0.030%, lithium chloride 0.035%, calcium hydrate 0.010%. (Trade Literature.)

*Desazon.*—A preparation given to soldiers to purify their drinking water. One ampul containing 0.2 Gm. 75 per cent. chlorinated lime, the other containing 0.35 Gm. ortezone (a combination of water and urea). The first capsule is sufficient to sterilize 1 liter of water and the ortezone is added to destroy the remaining chlorine taste and odor. (Y. B. 1916.)

*Disinfecting Paste (Chlorinated).*—Consists of boric acid 10 parts, talc 15 parts and chlorinated lime 2 parts made into a paste with water. (Y. B. 1918.)

*Fecto.*—A chlorine antiseptic described as an aqueous solution of alkaline hypochloritis with a trace of free chlorine. (Y. B. 1920.)

*Hyporite.*—According to Michaels is a pure calcium hypochlorite containing a little calcium chloride and a very little lime. In form of a powder. (Y. B. 1919.)

*Hychlorite.*—A solution of chlorinated soda, each 100 Gm. of which is said to contain sodium hypochlorite 4.05 Gm., sodium chloride 3.20 Gm., calcium hydroxide 0.17 Gm., inert salts 0.92 Gm. It contains not less than 3.85 per cent. of available chlorine. (N. N. R. 922.)

### 3. PHARMACOPŒIAL SYNONYMY.

Labarraque's solution was first introduced into the U. S. P. in the 1840 revision, under the official Latin title, *Liquor Sodæ Chlorinatæ.* This title continued until the revisions of 1880 and 1890, in which it was changed to *Liquor Sodæ Chloratæ.* In the 1900 and 1910 revision the original official Latin title, *viz.*, *Liquor Sodæ Chlorinatæ*, was restored.

The official English title of the 1840 revision, *viz.*, *Solution of Chlorinated Soda*, was used throughout.

Although the solution was originally known as Labarraque's Solution, this name was not introduced as a synonym until 1880. It appeared in all of the following revisions, however, in the index only of the 1900 revision. The last revision of the U. S. P., that of 1910, introduced the official abbreviation, *Liq. Sod. Chlorinat.*

The official Latin title for the revisions of 1880 and 1890, *viz.*, *Liquor Sodæ Chloratæ*, might be looked upon as a misnomer. According to the nomenclature of the 1870 revision, *Sodæ Chloratæ* would be sodium chlorate, hence the title *Liquor Sodæ Chloratæ* would mean solution of sodium chlorate. Inasmuch as the solution contains a mixture of the chlorine salts of sodium, the above assumption might prevail.

The following is a list of Pharmacopœial titles and synonyms for Labarraque's Solution:

*Belgian Pharmacopœia.*

1854—Chloruretum Sodæ Liquidum.
Chlorure de Soude'.
Hypochlorite Sodique.
Chlorite de Soude.
Liquor de Labarraque.
Liquor natri chlorosi.

1855—Hypochlorite Sodique' Liquide.
Hypochloris Sodii Liquidus.

*British Pharmacopœia.*

1864—Liquor Sodæ Chloratæ.
Solution of Chlorinated Soda.

1885—Liquor Sodæ Chlorinatæ.
Solution of Chlorinated Soda.

*French Pharmacopœia.*

1837—Hypochlorite de Soude Liquide.
Hypochloris Sodius Aqua Solutus.
Chloure de soude.
Chlorite de soude.
Liquor de Labarraque.

1866—Same, except "chlorite de Soude" dropped.

1908—Soude (Chlorurede) Discous.
Natrium Hypochlorosum solutum.
Solution officinale D'Hypochloride de Soude.
Liquor de Labarraque.

*German Pharmacopœia.*

1872—Liquor Natri chlorati.
Blichfluessigkeit.
Liquor Natri Hypochlorosi.

*India, Pharmacopœia of*

1868—Liquor Sodæ Chloratæ.
Solution of Chlorinated Soda.

*Italian Pharmacopœia.*

1892—Ipochlorito di Sodio.
Hypochloris natrii.
Chloruro di soda.
Liquor di Labarraque.

*London Pharmacopœia.*

1838—Liquor Sodæ Chlorinatæ.
Solution of Chlorinated Soda.

*Mexican Pharmacopœia.*

1874—Hipochlorito de Soso.
Chlorue de Soso.
Chlorito de Soso.
Chloruro desinfectante.
Licor de Labarraque.
Hypochloris Sodicus aqua solutus.
1904—Hipochlorito de sodio liquido.
Hypochloris sodicus aqua solutus.

*Portuguese Pharmacopœia.*

1876—Soluto de Soda Chlorada.
Solutum Natri chlorati.
Soluto de Hypo-chlorito de Soda.
Chloruseto de Soda Liquido.

*Spanish Pharmacopœia.*

1884—Solucion de Hipochlorito Sodico.
Solutum hypochlorites sodici.
Hipochlorito de Sosa Liquido.
Churo de Soso Liquido.
Licor de Labarraque.
Hypochloris sodæ liquidus.
Chlorurum sodæ liquidum.
Chlorurum sodæ liquidum.
Liquor vel aqua ex Labarraque.
1905—Same.

*United States Pharmacopœia.*

1840—Liquor Sodæ Chlorinatæ.
Solution of Chlorinated Soda.
1850—Same.
1860—Same.
1870—Same.
1880—Liquor Sodæ Chloratæ.
Solution of Chlorinated Soda.
Labarraque's Solution.
1890—Same.
1900—Liquor Sodæ Chlorinatæ.
Solution of Chlorinated Soda.
Labarraque's Solution. (In index.)
1910—Liquor Sodæ Chlorinatæ.
Solution of Chlorinated Soda.
Labarraque's Solution.
Liq. Sod. Chlorinat.

ADDENDUM.

Since the publication of the first number of this review, several reprints and references have been received, relating to hypochlorite solutions. It was stated in the prefatory remarks that the review was incomplete. However an attempt was made to bring out the several phases of the work done so far. A complete bibliography with a classified index was considered, but after several months' work was set aside as being "never ending." One reprint received offers a "quick" process for preparing a hypochlorite solution. The procedure is as follows: Dilute 1 volume of chlorinated soda solution (2.8–2.9 per cent. avail. Cl) with 5 volumes of water, add 25 cc. of sodium bicarbonate solution (approx. 5 per cent.) for every liter of chlorinated soda, and mix well. Remove about 20 cc. of the solution, add to it a small pinch of phenolphthalein, and shake gently for two minutes. If no red color appears the solution is ready for use. If a red color appears add from 10 to 20 cc. more of sodium bicarbonate solution and repeat the test. The sodium bicarbonate solution is to be added until no red color appears when the phenolphthalein test is applied. (Rosengarten, J. A. M. A., Vol. 64, p. 1075.)

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# SOME ALLEGED TUBERCULOSIS CURES EXPLOITED THROUGH THE MAILS.*

BY L. F. KEBLER.[1]

The manufacture of alleged tuberculosis cures is gradually becoming an unprofitable business. It has taken a long time to drive home the fact that no form of drug medication known at present will cure consumption. The medical profession has fully realized this fact for years, although occasionally inadvertent statements that certain agents are efficacious for the treatment of phthisis have been made. Many druggists are giving yeomen service in advising would-be purchasers not to use these alleged cures, but to consult a physician. Furthermore, many intelligent laymen now realize the worthlessness of drugs as curative agents for tuberculosis.

Nevertheless false and misleading advertisements still lead many victims of consumption to grasp at the straws offered by unscrupulous promoters of this class of medicinal preparations. Delays caused by using such products rob the unfortunate of golden days that might be used advantageously in the accepted treatment for consumption, with a good chance for regaining health and strength.

The death rate of tuberculosis has been greatly reduced during the last quarter of a century by the well-known treatment embodying hygiene, open air, enough wholesome food, rest, and peace of mind. The use of certain drugs for ameliorating certain symptoms is desirable and often beneficial.

Records of post mortems for all diseases show that from 75 to 90 per cent. of all cadavers so examined have had attacks of tuberculosis and recovered. Thus it is apparent that recovery without the use of drugs is the rule. Nevertheless there are few drugs known to mankind that have not been advocated as cures for this disease.

Formerly many alleged tuberculosis cures contained opium or morphine or some derivative thereof. Among these may be mentioned Tuberculozyne (heroin), Shiloh's Consumption Cure (opium), and East Indian Consumption Cure (morphine). Such products, however, are no longer available to the general public and it is doubtful whether they can be purchased in the United States.

Alleged consumption cures may be classed in three groups: (1) inhalation of gases or volatile agents; (2) internal medication; (3) a combination of groups 1 and 2.

The following preparations for which moneys have been received through the United States mails were examined in the Bureau of Chemistry, reported to the Post Office Department and action taken to put an end to their sale under the guise of consumption cures. As a result the various promoters concerned have either eliminated from all their advertising matter every reference to tuberculosis, both direct and indirect, by testimonials and otherwise, or else they have signed affidavits that they have gone out of business on a certain date, never to resume under any name and that their mail would be stamped as "refused" and returned to the senders. Fraud orders were issued in some cases and the several postmasters instructed to refuse delivery of all mail addressed to any name or names covered by the orders. Several cases were taken into court.

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[1] Bureau of Chemistry, U. S. Department of Agriculture.

INHALATION TREATMENTS.

Inhalations of various gases and volatile liquids for treating consumption have been in use for generations. Some physicians considered them efficacious in giving relief to patients; others believed that they possessed curative properties; and a few claimed to have actually cured some cases with them.

Only a few treatments depend on inhalation alone. Usually they include other forms of medication. The claim usually made for them is that the volatile drugs inhaled reach the remotest recesses of the lungs and kill the germs. Theoretically this is fine, but practically the attenuated gases inhaled into the lungs have no germicidal value. A patient would succumb before the tuberculosis germs could be destroyed in this way.

*Thompson's Treatment* (Texas).—In this smoke treatment wood was burned in a specially constructed stove, the fumes passed through prepared earth, and the gases were inhaled from an upper opening.

*Ammonium Chloride Cure.*—Ammonia and hydrochloric acid in gaseous form were brought together in a small container. The well-known visible cloud of ammonium chloride thus formed was inhaled through a suitably constructed device. The psychology in this case was a potent factor.

INTERNAL MEDICATION.

Internal medication is the commonest and probably the oldest method for the alleged curing of consumption.

*Dr. Brown's New Consumption Remedy* (Florida).—In 1916 this medicine was found to be a dark brown emulsion containing creosote, phosphoric acid, sodium phosphate, magnesium sulphate, glucose, sugar and a trace of some unidentified alkaloid. In 1922 it was a maltose syrup with creosote and a trace of Donovan's solution.

*Clearo, the Indian Herb Treatment* (Texas).—Analysis showed that it consisted of non-alkaloidal plant extractive (2 per cent.), alcohol (39 per cent. by volume) and water (59 per cent.).

*Radam's Microbe Killer* (Brooklyn).—This "standard internal germicide" and "universal cure for disease and consumption in particular" was a watery solution of sulphuric acid (about 1 per cent.) and sulphurous acid (from 0.01 to 0.03 per cent.). The solution was prepared by burning a mixture of sulphur, sodium nitrate, manganese dioxide, sandalwood and potassium chlorate and absorbing the gases in water.

*Nature's Creation* (Ohio).—This treatment consisted of a liquid and small brown tablets. The liquid was a hydroalcoholic solution of potassium iodide, sodium sulphate, sodium phosphate, sarsaparilla, licorice, senna and mezereum, flavored with oils of anise, sweet birch and sassafras. This is essentially sarsaparilla compound, U. S. P., with potassium iodide, sodium sulphate, sodium phosphate and senna, flavored with essential oils. The brown tablets were composed principally of aloes.

*Vita* (Louisiana).—This "Twentieth Century wonder killing all germs and microbes" and "cure for White Plague, commonly known as tuberculosis," consisted of water (96.8 per cent.) and potassium nitrate (3.1 per cent.), flavored with methyl salicylate and sassafras.

*Addiline* (Ohio).—Liquid petrolatum (62 per cent.), fixed oil (26 per cent.) and terebene (11½ per cent.) made up this "cure." One of the representations made was that this preparation would cause belching, when one of the ingredients (terebene) would find its way into the lungs where it exerted a direct effect on the tuberculosis germs.

*Dad Parry's Vegetable Compound, Tuberculosis Cure* (Pennsylvania).—The treatment consisted in taking in one dose an eight-ounce mixture of alcohol (20 per cent.), water (20 per cent.) and olive oil (60 per cent.), slightly flavored with some essential oil. The cure was supposed to be due to the flavoring used.

*Eye Water Cure* (Kansas).—One of the most unique treatments for consumption and other chronic disease, including gunshot wounds, was the one concocted by Professor Samuels. It was a watery solution of salt (about 5 per cent.) and sugar (about 5 per cent.). An ounce of it sold for $5 to $25. The solution was dropped into the eyes from which, it was claimed, the medication permeated the entire body, thus effecting the cures. The professor contested the case at every point. A fraud order was issued. The case was taken into court where the promoter was convicted and sentenced to a term in prison and a fine of $5000 imposed. People who stated that they had been cured by this hydrant water solution of salt and sugar roundly berated the Government for denying them the use of this wonderful medicine. When the professor had served his term he applied to the Postmaster General to lift the fraud order so that he could reëngage in the business.

INHALATIONS AND INTERNAL MEDICATION COMBINED.

*Sanosin* (Illinois).—The United States Government unwittingly became an advocate of this alleged discovery of a German merchant traveling in Australia, through the publication in the Consular Reports of June 6, 1903, of a glowing account entitled "New Treatment for Tuberculosis." The mixture consisted of sulphur (70 per cent.), charcoal (20 per cent.) and eucalyptus oil (10 per cent.). The user was directed to heat, on a porous earthenware plate, which came with the preparation, a small tube of the mixture for a certain length of time in a closed room, and to inhale the gases evolved during a night's rest or a given length of time during the day. Tests showed that none of the charcoal was oxidized, that the oil was volatilized, and that a small quantity of the sulphur sublimed while about 0.2 per cent. was converted into sulphur dioxide. This quantity of sulphur dioxide in a room 10 by 10 by 10 feet would be rather dilute. On exposing typhoid and other germs for four hours in a closed chamber of a 1000 cubic feet capacity, in which the prescribed quantity of Sanosin was heated as directed, the germs were not destroyed. *Sanosin balsam*, which consisted of a fixed oil, menthol and oil of eucalyptus, was also sold to be applied locally.

*Dr. Glass Inhalant Method* (California).—The inhalant was alleged to contain beechwood creosote, oil of cassia, chloroform, tincture of iodine, pine tar, menthol, camphor, essential oil of mustard, carbolic acid, turpentine, and eucalyptus oil. The analyst found creosote, combined iodine, chloroform, alcohol, oil of eucalyptus and a vaseline-like residue on distillation. It was directed that from 20 to 30 drops of the inhalant be placed on a sponge, included in a mask-like device, the whole placed over the nose and mouth and inhalations made for about twelve hours during the day. The internal medication consisted of *tonic tablets*, containing

compounds of iron, quinine, and strychnine; *fever and chill tablets*, composed of acetylsalicylic acid flavored with methyl salicylate; and *constitutional tablets*, containing plant laxatives, flavored with oil of cinnamon.

*The Inhalant Method Company* (California).—The inhalant, 88 per cent. of which was volatile, was a dark liquid, containing alcohol, chloroform, creosote, combined iodine, oil of cinnamon, oil of eucalyptus, and some undetermined non-volatile matter. The methods of use and the internal medications were practically the same as those employed by Dr. Glass. In fact, this scheme had been almost bodily appropriated by a former employee of Dr. Glass who expressed himself rather bitterly at the hearing because he felt that the Government had called him to account but left these filching malefactors undisturbed. Dr. Glass found out later that he was mistaken in this respect.

*Dr. Marshal Beaty's Aeriform Systemic Treatment* (Ohio).—This was claimed to be a specific germicidal medication, consisting of inhalations and internal medicine. The doctor stated that it would cure germ diseases in general and tuberculosis in particular. The nasal inhalations were to be medicated by drawing air through an aqueous solution of sodium bicarbonate, creosote, camphor, menthol and eucalyptus oil. The internal medication, constituting a part of this treatment, consisted of (1) *cough and expectorant tablets*, containing sugar, menthol, licorice and starch; (2) *internal systemic tablets*, (*a*) cream-colored tablets, containing sugar, starch and unidentified bitter principle, (*b*) yellow tablets, containing sugar, starch, a bitter principle and plant tissue; (*c*) brown tablets, containing sugar, starch, a bitter principle and red oxide of iron; (3) *gargle and antiseptic mouth wash*, white tablets containing common salt, borax, starch and talc; (4) *anti-germ healine*, a petrolatum salve flavored with sassafras and colored with iodeosin.

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## PHARMACY AS PRACTICED IN CHINA.

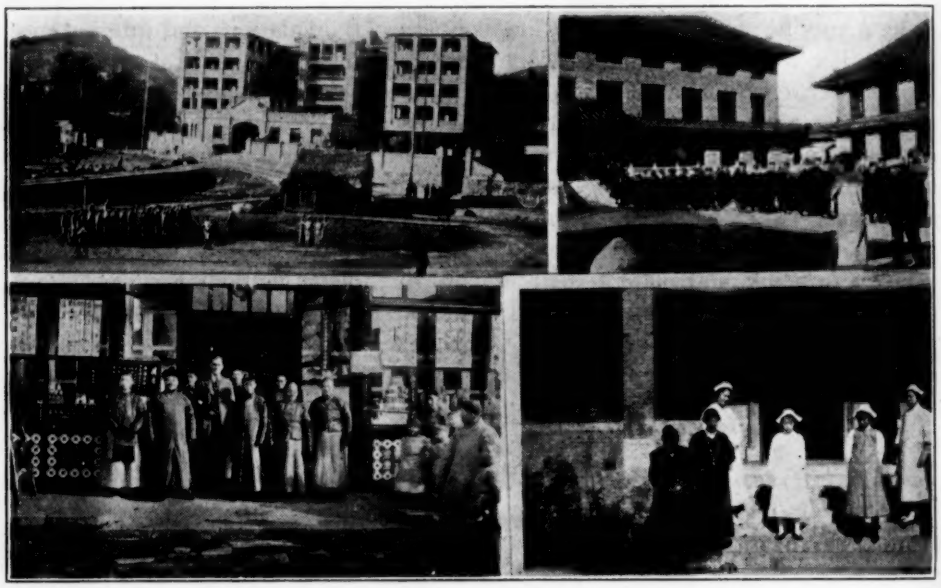
BY HARVEY V. STOKELY.

The paper which follows was presented by Chairman Robert J. Ruth to the Section on Practical Pharmacy and Dispensing for Pharmacist Harvey V. Stokely. It was communicated in the form of a letter and accompanied by 14 kodak pictures; all of them have general interest; four of them are shown, namely, Stout Memorial Hospital, supported by the Southern Baptist Mission, one of the largest and best-equipped hospitals in South China. One of the buildings of Peking Union Medical College, which is the wonder of the Far East and doing great work along medical lines. The picture on the left, lower, shows a typical Chinese drug store and the staff; usually there are many apprentices who work without pay to learn "pidgin." The next picture shows part of the staff of the Isabella Fisher Memorial Hospital located at Tientsin and is supported by the Methodist Mission. Other "snap-shots," not shown, are as follows: the "Roanoke," a large speedy hospital boat of the Stout Memorial, used up and down the West River to give medical attention; another view of the Peking Union Medical College; Sompom life of the Chinese coolies; a Gorge trip in China; part of the Chinese Wall; Boat-House people of Hainan—they are not permitted to build on the ground, hence, live in houses built on poles. Other pictures will be explained in the body of the letter. Mr. Stokely is a classmate of Chairman Robert J. Ruth. The introductory remarks of the letter are omitted.—EDITOR.

"Pharmacy, as a profession, as well as that of medicine in China is suffering materially due to the fact that there are no laws which protect a qualified man against one not qualified. A college of pharmacy is very badly needed; as far as

I have been able to learn in my travels there are not more than ten qualified pharmacists in China. Professor Charles O. Lee, who formerly taught pharmacy at Purdue University, strongly favors the establishment of a college of pharmacy. There certainly would be opportunities for pharmacy graduates; the mission hospitals alone could take hundreds and it would be a great saving to these institutions for many Chinese pharmacists have no idea of the costs, potency, etc., of the drugs they handle.

"For some time the Japanese have been quite active in an effort to have their Pharmacopœia adopted by the Chinese; as the Japanese are largely under the German pharmaceutical influence, we are anxious to see this movement defeated and have the Chinese adopt the U. S. P. and the B. P. as their standards. This is gradually being accomplished now.*



Upper left, Stout Memorial Hospital; Upper right, one of the buildings of Union Medical College; Lower left, Chinese drug store; Lower right, Isabella Fisher Memorial Hospital.

"There are various kinds of drug stores in China and some of them compare very favorably with our best stores at home. Among the foreign-owned stores the British are in the lead numerically and all of them are in charge of qualified British chemists. There are only a very few American drug stores and about an equal number of French pharmacies. There are two kinds of Chinese drug stores; one is the 'Proper Chinese Drug Store' wherein work is conducted along the same lines as the foreign ones and they compound prescriptions. The other is the 'Chinese Fashion Drug Store;' these only carry the Chinese native roots, herbs, etc., and, believe me—they do a large business, as the most of the natives use this kind of medication; the use of foreign medicines is growing but still, comparatively, very limited. It is very interesting to watch these natives dispense these roots and herbs,

* The United States Pharmacopœia has recently been translated into Chinese. A review for the JOURNAL A. PH. A. is in preparation.—EDITOR.

many hundreds of them; some of their prescriptions evidently contain ten or more ingredients.

"You may be interested to know that Chinese who have been educated along foreign medical lines and, possibly, have worked in Mission Hospitals for many years, will employ the Chinese native drugs and treatment when they or their families are taken sick. Mission doctors are gradually gaining the confidence of the natives; the Chinese are superstitious about entering foreign hospitals; they have an idea that the foreign doctor does all sorts of inhuman stunts, but oftentimes when near death's door they finally do come and usually a 'Chinese Fashion Doctor' has been trying his methods on them first. You can imagine the infections that result when these doctors apply their very unsanitary poultices, etc., on a highly infected area or use hot needles on such a surface in hopes that they can drive out the devils.

"The Chinese are large users of patent preparations; the extensively advertised lines are consumed in unlimited quantities. Blaud's pills and cod liver oil are also consumed in quantities due to the fact that the natives suffer very much from malnutrition and have T. B. tendencies. When the Chinese come to know a brand it is very necessary to continue supplying these, because the least change in package or preparation arouses their suspicions.

"There is comparatively little drug manufacturing done in China but it is very probable that more will be done in the near future. Drugs like rhubarb, squill and curcuma are to be had in quantities and also cinnabar. The pharmacognosist of the Peking Union Medical College has started a drug farm on a small scale and is interested to learn what can be done along these lines in China. Opium is grown and consumed in enormous quantities which, if not stopped, means the downfall of the country; unfortunately, the business is profitable, and one is overcome with sympathy and sadness in going through the interior and seeing the acres and acres of blooming poppy flowers.

"A great deal of travel in China is done in sedan chairs. When traveling in level country usually four coolies are engaged, but for other travel sometimes six or eight are required. It is very amusing, when bargaining for a trip, to figure out the Chinese coolie reasoning; my height is 3 inches above six feet, and I am slender, weighing only 165 pounds; when they size me up they make an awful fuss about carrying such a tall fellow; however, if a stout person comes along who happens to be short, although weighing over 225 pounds, he is given the preference over me.

"Sales work in China must largely be done through an interpreter, although nearly all Chinese can read the formulas of pharmaceuticals and a great many of them speak and read English very well indeed. Mr. Liou, shown in one of the pictures, is a very capable man; he owns his own dispensary (the word "pharmacy" is not used much in China); occasionally he goes with me on trips through the interior.

"One of the pictures shows three typical Chinamen with their automobiles. The motor roads in Shansi were built by the American Red Cross at a cost of $500,000 and at a time when this province was suffering from a famine. The famine sufferers were employed in the building of the roads; this has greatly aided travel.

"China is going through many internal troubles, due to various causes; however, I am confident that China eventually will come through O. K. There is a great deal

of unjust criticism by foreigners who have thrust on China many vices; when conditions are sifted down China is in a much healthier state than some of the European countries. Unfortunately, there are a few in China who are causing a great deal of trouble who do not represent the law-abiding Chinese citizen."

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## PRESCRIPTION PRICING PSYCHOLOGY.*

BY JOHN CULLEY.

The study of this great universe of ours is built around one science called Philosophy. All real data or knowledge concerning the material part of this world is sensible and together with the laws regulating the changes in matter is called the science of physics. Things existing in the mind but not in reality—things which go beyond our sense of reason, where reason is valueless—are termed the science of meta-physics. That portion of the latter science which is exclusively occupied with the phenomena of the human mind is called Psychology. Thought transference, mental telepathy, hypnotism, suggestion, are all psychological problems.

A physician's written prescription naturally falls within the scope of these two sciences. The physical or material part of a prescription is the mere scrap of paper it is written upon and the bottle or box of medicine delivered to the patient. The meta-physical or psychological side of the prescription is the faith—the credence—the assurance—the confidence existing within the mind of the patient that the prescription was written by the doctor as the result of a most careful and correct diagnosis and that the prescription was compounded most carefully and correctly with the purest of drugs by an educated, well-trained, experienced and qualified pharmacist, and the further supposition that the medicine will produce the desired results. This psychological belief in the efficacy of the compounded prescription should be instilled by suggestion into the mind of the patient by both physician and pharmacist for the mutual benefit of all three.

Human beings have dual minds—conscious and the subconscious—the conscious mind being sensible to the material or physical side of life and the subconscious being susceptible to the psychological or suggestive side. We are all more or less susceptible to suggestion of thought—a mild form of hypnotism if you will. To any suggestion that comes to us, we subconsciously apply the critical faculty. We enquire within the innermost recesses of our minds whether there is a logical reason for or against it, whether it is in line with our wishes. If we desire it so—we subconsciously believe it is so.

How to produce this psychological impression—how to use a little thought transference or mental telepathy on the mind of the patient and with a physical or material profit to us—is our problem.

There is a song used in my section of the country that begins thus,—"God moves in a mysterious way, His wonders to perform."

The scientifically trained pharmacist should emulate the idea conveyed in this quotation and perform his wonders of compounding in a mysterious way.

Alchemy was the forerunner of all sciences and especially that of pharmacy, and depended very largely for its very existence upon this force of mystery; yet

* Section on Commercial Interests, A. Ph. A., Asheville meeting, 1923.

those who practiced that art were looked upon by the laity as being men of great ability, intelligence and learning far above the man in the ordinary walks of life. Pharmacists to-day are accorded that some honor of intellectuality, learning and ability. Pharmacy being the modern child of this ancient and mysterious science can look back with a great deal of pride upon its ancestor's achievements and can honorably and well afford to capitalize this heritage of mystery.

The scientifically trained pharmacist of to-day will therefore start the mental suggestions by compounding the prescription beyond closed doors, away from the curious eyes and annoyances, in a manner that is more or less shrouded in mystery, and paving the way to incidentally collect a compounding or professional fee in addition to the price of the drugs entering therein.

In order to create or produce the psychological impression within the mind of the patient that our charge is right and just, it is necessary to coördinate our scientific attainments and knowledge of meta-physics with a little common sense and good judgment. Everything that is of value, luxuries or necessities, should be dressed in a package that will in some way convey the idea of its value. The one thing that a person considers most precious is health, therefore the things that will give to us health must necessarily be considered the most valuable.

Now let us see how this theory will work in practice. Why should we not dress up a prescription for a dozen pills in a beautiful nest of white or pink cotton within a good quality of pill box thereby psychologically conveying the mental suggestion upon the subconscious mind of the patient that the remedy is not only valuable from a therapeutical standpoint but also from a monetary one. It will enable us to collect an increased charge on the suggestion conveyed that the pills are far from being of the ordinary kind; that they must be of extraordinary quality, more precious and of a rare variety; more efficacious, therefore more valuable, to deserve such marked attention and unusual care, and that we appreciate the fact by virtue of our education and experience along pharmaceutical lines.

A prescription calling for a dozen Compound Cathartic Pills dispensed in full view of the patient and dumped in the pill box in the ordinary manner is worth perhaps twenty-five cents and will do about as much good. Take that same prescription and fill it in the manner suggested, within the confines of a private room and charge seventy-five cents for it, and what happens? The first impression within the mind of the customer is that the medicine must be good because it costs so much and if it is so good it must produce the desired results. We have put into that medicine something that was not in the two-bit article—Faith.

Any physician will tell us that half the battle in healing the sick is won if he can only impart to the patient the idea of faith in the treatment he is giving.

Why should we not help along this idea of faith in the medicine by a little psychological suggestion as in the pill case and, incidentally, collect an additional fee for the service?

The mental suggestions that good things come in packages of individuality can be further carried out in the prescription department in various and many ways by exercising a little of the native intellectuality we are supposed to have inherited.

Prescriptions calling for drop doses and eye treatments should be dispensed in bottles with a dropper stopper and all enclosed within a box made especially for that size of bottle. Two prescriptions of the same size should be dispensed in bottles

of different shape. Two or more prescriptions for pills or tablets should be placed in different shaped boxes or of different colors; capsules and tablets of Gland products should be dispensed in screw cap bottles. Ointments in jars and not tin boxes. Suppositories in boxes specially designed for them. Several prescriptions coming from the same patient should carry different and odd prices, and never be priced all alike, else the impression has been passed that all prescriptions cost the same.

These are little things but it is these little things that produce the right impression and make the customer pleased to pay the price.

Some will say that it is impossible to collect an increased price for a prescription in advance of or above the regular prescribed profit and that the idea is founded on a fallacy. A prescription is the one and only thing in a pharmacy relative to which the customer cannot talk price and cut-rates, whereas the pharmacist can talk quality, science and give service. There is no competition in brains.

The patient will gladly pay the price for quality and service and the higher the price to a reasonable degree the greater the psychological impression it will make. It will serve to instil within the mind of the patient that faith that is necessary for the cure of disease.

Let us try the psychology on ourselves, call it auto-suggestion. If we lack confidence in our own judgment we can't blame other people if they share the feeling. The only thing to do is to try it out. I did; this is the result. A year or two ago our average price for prescriptions was 67 cents; we have gradually increased the price until it is now $1.03 and growing. The materials did not cost us any more, in fact less, so the profit must have raised—at least an average of 36 cents on each. The average profit on 1000 prescriptions filled at psychology prices will be about $750.00. Can any department in the store show a turnover and profit like that?

How can we excuse ourselves for charging a real professional price for services rendered in addition to the cost of the goods. There is no excuse necessary. Sometime ago there appeared a cartoon in a newspaper regarding the high prices of food. The cartoon was in three sections, the middle section being absolutely black, the first section showed a farmer selling his potatoes to the grocer at $1.00 per hundred weight, the third section showed the grocer selling them at $4.00 the hundred, and the title of the picture was "What happened in the dark?" We all know what happened in this case, overhead expense and loss, etc. In the case of a prescription what happens in the dark is of an entirely different character.

In addition to the merchandise and business over-head costs which enter into a prescription the pharmacist adds other thing—years of costly education, scientific ability and protection. The pharmacist in this case ceases to be a merchant but becomes a professional man and also a producer. He produces a value to the drugs that were not there before, he produces by his professional ability and psychological suggestions faith and confidence in the medicine and a small fee for services rendered is but fair and just and is gladly paid by those receiving it.

PRESCRIPTION PRICE LIST.

| Liquids—teaspoonful doses. | | | |
|---|---|---|---|
| 1 ounce | $ .50 | 3 ounces | $ .85–1.00 |
| 2 ounces | .75 | 4 ounces | 1.00–1.25 |
| | | 6 ounces | 1.25–1.50 |

| | |
|---|---|
| 8 ounces | $1.50–1.75 |
| 12 ounces | 1.75–2.00 |
| 16 ounces | 2.00–2.50 |
| Dessertspoonful doses about | 10% less |
| Tablespoonful doses about | 15% less |

Eye drops and drop doses.

| | |
|---|---|
| 1 ounce or less | $.75 up |

Argyrol and like solutions.

| | |
|---|---|
| On basis of 10% solutions at | $.50 an ounce |
| On basis of 15% solutions at | .75 an ounce |

Pills. Tablets of ordinary cost.

| | |
|---|---|
| 12 | $.40–.50 |
| 3 cents each up to 50 pills | |
| 50 for | 1.00 |
| 100 for | 1.50–2.00 |

Capsules and powders.

| | |
|---|---|
| 12 for | $ .75 |
| 18 for | 1.00 |
| 24 for | 1.25 |
| 50 for | 1.50 |
| 100 for | 2.00 |

Suppositories.

| | |
|---|---|
| $1.00 for | 12 or less |

Ointments—Eye Ointments, 50–75 Drachm tubes.

| | |
|---|---|
| 1 ounce | $.75 |
| 2 ounces | 1.00 |
| 3 ounces | 1.25 |
| 4 ounces | 1.50 |
| 8 ounces | 2.00 |

Proprietary remedies dispensed in original bottles, charged at double the cost.

When any narcotic is added to any ordinary prescription, a charge is made for that ingredient and 25 cents added to cover registration.

Drugs of an expensive character are dispensed at not less than double the cost in addition to the regular charge for powders, capsules, etc.

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## PRICE SCHEDULE.*

BY CHARLES R. WEILLS.

The following pricing schedule is one similar to that used in a chain store group in a large Eastern city. It has been found to be very practical and after one becomes familiar with the outline it is only a matter of a few seconds to properly price a product. The schedule is comprehensive enough to cover almost every need and if any point is lacking it can easily be supplied by making comparisons with other values.

### PROPRIETARIES.

Where proprietaries are sold over the counter in broken packages the following schedule is used.

| Selling price per pint. | 1/2 oz. | 1 oz. | 2 oz. | 3 oz. | 4 oz. | 8 oz. |
|---|---|---|---|---|---|---|
| .50 | .10 | .10 | .15 | .20 | .25 | .35 |
| .75 | .10 | .15 | .25 | .30 | .35 | .50 |
| 1.00 | .10 | .15 | .25 | .35 | .45 | .65 |
| 1.25 | .15 | .20 | .30 | .40 | .50 | .75 |
| 1.50 | .15 | .20 | .35 | .45 | .55 | .90 |
| 1.75 | .15 | .25 | .40 | .50 | .60 | 1.00 |
| 2.00 | .15 | .25 | .45 | .60 | .75 | 1.25 |
| 2.25 | .20 | .30 | .50 | .70 | .85 | 1.35 |
| 2.50 | .25 | .35 | .60 | .75 | .90 | 1.50 |
| 3.00 | .25 | .35 | .65 | .85 | 1.00 | 1.75 |
| 3.50 | .25 | .40 | .75 | 1.00 | 1.25 | 2.00 |
| 4.00 | .25 | .45 | .85 | 1.15 | 1.35 | 2.25 |
| 4.50 | .35 | .60 | 1.00 | 1.25 | 1.50 | 2.50 |
| 5.00 | .40 | .75 | 1.10 | 1.40 | 1.65 | 2.75 |

For prescriptions, add 20 cents to the above prices for labeling, container, etc.

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* Section on Commercial Interests, A. PH. A., Asheville meeting, 1923.

PRESCRIPTIONS.

*Liquids.*

In the following schedule the final price is based on the cost of the finished prescription per fluidounce. Thus if a four-ounce mixture was found to cost seven cents an ounce, by referring to the chart, locating the seven in the first column and then following across the row of figures to the four-ounce column, the figure at the intersection, in this case eighty-five cents, would be the final price of the prescription. This chart can readily be extended to include the intermediate prices per ounce, only part being given here.

| Cost of prescription per oz. | 1/2 | 1 | 2 | 3 | 4 | 6 | 8 | 12 | 16 |
|---|---|---|---|---|---|---|---|---|---|
| .01 | .30 | .35 | .40 | .45 | .50 | .60 | .75 | .90 | 1.00 |
| .03 | .30 | .35 | .45 | .50 | .60 | .75 | .90 | 1.15 | 1.35 |
| .05 | .30 | .35 | .45 | .55 | .65 | .80 | 1.00 | 1.25 | 1.40 |
| .07 | .30 | .40 | .55 | .70 | .85 | 1.10 | 1.25 | 1.60 | 1.85 |
| .09 | .30 | .40 | .60 | .80 | 1.00 | 1.25 | 1.40 | 1.85 | 2.25 |
| .11 | .35 | .40 | .65 | .90 | 1.10 | 1.35 | 1.60 | 2.10 | 2.60 |
| .13 | .35 | .45 | .75 | 1.00 | 1.20 | 1.60 | 1.90 | 2.45 | 3.00 |
| .15 | .40 | .50 | .80 | 1.10 | 1.35 | 1.80 | 2.20 | 2.80 | 3.35 |
| .18 | .40 | .55 | .90 | 1.20 | 1.50 | 2.00 | 2.40 | .... | .... |
| .21 | .45 | .60 | .95 | 1.25 | 1.55 | 2.10 | 2.50 | .... | .... |
| .25 | .45 | .70 | 1.15 | 1.50 | 1.80 | .... | .... | .... | .... |

*Eye Solutions.*

Eye solutions costing up to 15 cents an ounce are priced at 40 cents, and if an eye dropper bottle is used an additional 15 cents is added. For larger amounts the regular scale for liquids is followed.

*Pills and Tablets.* (Price over counter at retail.)

This schedule is based on the selling price per hundred, which is determined by adding one-half of the actual cost to the cost.

| Sell per C. | 6 | 12 | 24 | 36 | 50 |
|---|---|---|---|---|---|
| .35 | .10 | .10 | .15 | .20 | .25 |
| .50 | .10 | .10 | .20 | .25 | .35 |
| .75 | .10 | .15 | .25 | .35 | .50 |
| 1.00 | .15 | .20 | .35 | .45 | .60 |
| 1.50 | .15 | .25 | .40 | .65 | .85 |
| 2.00 | .25 | .40 | .70 | .90 | 1.25 |
| 2.50 | .25 | .45 | .80 | 1.10 | 1.50 |
| 3.00 | .30 | .50 | .90 | 1.35 | 1.75 |
| 4.00 | .30 | .50 | 1.00 | 1.50 | 2.00 |

For prescriptions, add 20 cents for labeling, container, etc.

*Pills, Powders, Capsules.* (Hand made—on Prescriptions.)

In this chart the final cost of the prescription is based on the cost per dozen and the procedure is the same as that used under "Liquids."

This scale plus 25 cents is also used for Konseals with a minimum price of $1.00 per dozen.

| Cost per dozen up to | 6 | 12 | 15 | 18 | 20 | 24 | 36 |
|---|---|---|---|---|---|---|---|
| .05 | .40 | .60 | .65 | .75 | .85 | .90 | 1.10 |
| .08 | .40 | .60 | .75 | .85 | .90 | 1.00 | 1.25 |
| .12 | .40 | .60 | .75 | .85 | .95 | 1.10 | 1.35 |
| .20 | .45 | .80 | .90 | 1.00 | 1.10 | 1.25 | .... |
| .24 | .50 | .90 | 1.00 | 1.15 | 1.25 | 1.35 | .... |
| .30 | .60 | 1.00 | 1.15 | 1.25 | 1.35 | 1.40 | .... |
| .40 | .75 | 1.25 | 1.60 | 1.60 | 1.65 | 1.75 | .... |

*Bulk Powders.*

For one ounce, the price is determined by adding 40 cents to the cost, and 10 cents is added for each additional ounce (up to 4). If a glass container is used, the cost of it is added to the prescription.

*Suppositories.*

This schedule is again based on the cost per dozen. A minimum price of $1.50 per dozen is charged for vaginal suppositories.

| Cost per dozen. | 6 | 12 | 24 | 36 |
|---|---|---|---|---|
| .20 | .60 | 1.00 | 1.75 | 2.25 |
| .30 | .75 | 1.10 | 1.85 | .... |
| .50 | .85 | 1.35 | 2.00 | .... |
| .80 | 1.00 | 1.65 | 2.50 | .... |
| 1.00 | 1.25 | 2.00 | 3.00 | .... |

*Ointments.*

The cost per ounce of finished ointment is used as the basis of pricing in this chart.

| Cost per oz. | ½ oz. | 1 oz. | 2 oz. | 3 oz. | 4 oz. |
|---|---|---|---|---|---|
| .05 | .35 | .50 | .75 | .85 | 1.00 |
| .10 | .40 | .60 | .75 | .90 | 1.15 |
| .15 | .45 | .65 | .85 | 1.00 | 1.25 |
| .20 | .50 | .75 | .95 | 1.20 | 1.50 |

For original packages of chemicals the selling price is determined by adding one-half of the actual cost to the cost.

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## HISTORY OF BRITISH MUSEUM.

The British Museum had its origin in the bequest of Sir Hans Sloane, a famous physician and naturalist, who provided in his will that his famous museum should be given to the public, provided that $100,000 should be paid to his family, which sum scarcely exceeded the intrinsic value of the gold and silver medals, coins, ores and precious stones, which had cost Sir Hans about $250,000.

In addition he bequeathed his library of 50,000 volumes and 3556 manuscripts. Soon after his death Parliament voted the necessary sum to his daughters and took over the collection, which thus formed the nucleus of the British Museum, the greatest institution of its kind in the world.

Sir Hans was an Irishman, born in the Green Island, of Scotch parents, and while a physician by profession, he had a passion for natural history which caused him at one time to spend sixteen months in Jamaica, where he wrote a natural history of the island.

John Bartram of Philadelphia and Sir Hans Sloane were co-workers—see JOURNAL A. PH. A., 6, 753, 1917.

## THE INFLUENCE OF ASSOCIATION.

An address delivered at Newark, N. J., April 14, 1924, upon being awarded the Remington Pharmacy Medal.

"Custom, that inexorable master, has decreed that I must deliver an address on this occasion. Since 'custom is held to be as a law' as a law-abiding citizen I must obey the dictate even though I am well aware that public speaking is not one of my accomplishments. When the chairman of your committee on arrangements hastened to my home city to acquaint me with the honor that was to be conferred upon me on this occasion, he did not fail to present, along with his congratulations, a notice of this duty. Nevertheless, to date he has not responded to my request for a topic on which I could direct my thoughts in addressing you and so, if you are disappointed in my remarks this evening, you must lay a portion of the blame upon the broad shoulders of Professor Fischelis.

George M. Beringer.

Remington Honor Medal.

"Left to my own resources, my thoughts given free rein wandered first in a reminiscent vein into the recesses of memory to some of the outstanding events in my own career and then turning from the retrospect toward the prospect attempted to peer into the future of our chosen profession with its increasing responsibilities.

"When the old fellows get together, they instinctively fall into reminiscence and recall incidents long forgotten. On this evening, there is a further incentive to retrospection in the attempt to trace out a reason for this occasion, to discover some *magnum opus* that justifies this distinction. With this review of the past, deeper has grown the conviction that if there have been any achievements, any success in the performance of tasks that have fallen to my lot, any meritorious services rendered that in some measure would justify this great honor, these have been largely due to the influence of those with whom I have been so fortunate as to

be associated and the Divine guidance in shaping these contacts and the beneficient impressions is gratefully acknowledged.

"As a product of the public schools of Philadelphia, it is fitting that the early impressions of the school should receive initial presentation. The first picture is of a little urchin, just entering his teens, a scholar in the George W. Nebinger school of that city. A prominent member of the Board of Education, at that period, was Dr. Andrew Nebinger, a brother of the man after whom this school was named. This director, from time to time, visited the school and inspired the scholars with his talks. You may call it hero worship, but we lads never had a nobler example than that worthy and leading citizen of the District of Old Southwark who was universally beloved for his public spirit and philanthropy and honored for his great interest in the cause of education. In my library I still cherish, with enduring admiration for the donor though more than half a century has passed by, a copy of 'The Life and Adventures of Robinson Crusoe,' which I received on the eleventh anniversary of my birth as one of the prizes in competitive scholarship that he had offered that year. To me this copy is more valuable than all of the other copies of Defoe's immortal story that have been printed.

"At the age of twelve, I was promoted to the Central High School, and for the next four years it was my privilege on every school day to tramp back and forth over the three miles intervening between the school and my home. In those days, a high school education was not the complement assured by the state to every boy and girl; selected students only were permitted to continue their education in this school with its renowned faculty and its academic courses in history, languages and the sciences. Athletic sports, class dances and the other forms of entertainment so popular in the high schools of to-day were then not recognized. The curriculum was not optional but was fundamental and each student was expected to take the complete course as mapped out with every minute of the school periods fully occupied and a measure of home studies thrown in. Each week we had to prepare at home, a composition and on Monday morning as many of these as possible were read in class and criticized.

"Here it was my good fortune to have a number of excellent teachers, although it cannot be said that I profited equally from all of their instruction as, despite the beautiful Spencerian copy of Professor Bartine, my handwriting is still scarcely legible. Dr. Jacob F. Holt gave us a scientific course in anatomy, physiology and hygiene that was far beyond the usual academic instruction in these branches. The professor of physical geography and natural philosophy was Edwin J. Houston, noted as an author and physicist. At this time, there was a young man in charge of the chemical laboratory who served as the assistant to the professor of chemistry and also to that of physics who was likewise an inspiring teacher that we boys greatly admired. Elihu Thomson was at that early day a mechanical and scientific genius destined to win recognition and fame. He now ranks as one of the world's leading physicists and electrical engineers, whose inventions and researches have won deserved international honor and renown and he is now an officer in the Legion of Honor and has been awarded the Rumford Medal by the Royal Society.

"Graduating from the high school in February 1876, and being duly elated with the pride and roseate visions of the youthful graduate and imbued with the spirit of the centennial year and armed with an A.B. diploma and a letter of introduction from

the professor of chemistry to Mr. Charles Bullock, the head of one of the leading drug firms in Philadelphia, I forthwith applied for a position to learn the art and mysteries of the apothecary. After looking me over and possibly noting my viridity as well as my earnestness, he agreed to take me on as an apprentice for a stipulated period of four years at the moderate wage then paid to such apprentices. On March 1, 1876, I engaged in the drug business as the youngest novice in the employ of Bullock & Crenshaw. I had then a latent desire to make pharmacy a stepping stone to the study of medicine which was my youthful ambition. However, the claims of pharmacy and of chemistry have so thoroughly engrossed my attention that this early intent was entirely eliminated.

"The errand duties and the menial services as usual fell to the lot of the junior apprentice. The trimming of labels, hours at a time, made me sleepy and as blue as I was green. Often since have I thought of the disparagements of pharmacy and the depressing and ridiculous suggestions made to the new apprentice. An incident of this type occurred the first day of my employment. A member of a nearby wholesale drug firm came into the store and, upon observing a new face, inquired of the manager who was the new boy? Upon being informed that I was a new apprentice he blurted out, 'My boy, take my advice, before learning the drug business you had better go right down to the foot of Arch Street and jump into the Delaware and drown yourself.' You can imagine the effect that such derisive and deprecating remarks have upon the novitiate and, doubtless, such ridicule has discouraged and deterred many a promising lad from entering upon a pharmaceutical career. Despite the advice, I stuck to the job and soon learned that the thoughtless remark was not a true index of the real nature of the speaker and in after-years I had the satisfaction of serving him frequently and of enjoying his friendship and a measure of his confidence.

"I was indeed fortunate in having as preceptors Bullock and Crenshaw. Charles Bullock was a scientist as well as a thorough pharmacist. He contributed a number of papers to pharmaceutical literature and his work on Veratrum was a notable research on an American drug. His masterly memoir of Professor William Procter, Jr., has been the basis for many of the articles that have since been published upon this eminent pharmacist whom we consider as the 'Father of American Pharmacy.' He gave largely of his time to the management of the Franklin Institute of Philadelphia and to the Philadelphia College of Pharmacy. The latter institution he served at various times as trustee, secretary, vice-president and as president. His associate in the business, Mr. Edmund A. Crenshaw, was a polished, educated, Christian gentleman, a high type of business man of the old school. Thoroughly reliable and honorable in all their dealings Bullock and Crenshaw enjoyed the confidence and good-will of the entire drug trade and their wholesale and retail departments proved to be a sort of pharmaceutical Mecca that attracted many of those identified with the drug interests and many leading physicians, scientists and worthy citizens. I enjoyed greatly the acquaintances thus made and the impressions gained from these contacts were deep and lasting. The sixteen years that I spent with this firm was a continuous schooling that gave me an unusually broad and varied experience.

"On the day of my inception into the drug business I was introduced to Thomas S. Wiegand, who was then managing the department for the manufacture of sugar

coated pills, a branch of manufacturing in which Bullock and Crenshaw were pioneers in this country. He took a kindly interest in the lonely lad and soon it became my custom to spend many of the noon hours in his company anxiously imbibing the instruction that was so freely given. Thus was commenced a friendship that cemented us closely together until death severed the tie. During his many years as registrar and librarian of the Philadelphia College of Pharmacy, 'Uncle Tommy,' as we lovingly called him, endeared himself to a host of students whose friend and adviser he was always, but to no one was he nearer or dearer than to me.

"I matriculated at the Philadelphia College of Pharmacy at the period when the three members of the major faculty, Professors John M. Maisch, Joseph P. Remington and Samuel P. Sadtler, were at their prime. Fortunate were the students who were privileged to listen to such earnest, devoted and able teachers. All three have now passed to the great beyond, but, on this occasion, I must pay to their memory the tribute of gratitude that I justly owe to them as teachers and likewise in honor of the close personal friendships and associations that continued throughout the post-graduate years.

"In 1880, I became a member of the college organization and for nearly forty years was actively interested in its affairs.

"In 1893, on the proposal of Professor Remington, I was elected to membership in the American Pharmaceutical Association but for a number of years took no active interest in the work of the Association. It was Dr. Henry M. Whelpley, as President, who drew me out of my 'clam shell' and put me to work as chairman of the Committee on Semi-Centennial Celebration which was held in Philadelphia in 1902. To be put into some active service in behalf of an association is the best incentive and the best way to develop interest in the membership. This initial service was my introduction to the ideals and great work of the American Pharmaceutical Association and here again I am indebted to a fortunate circumstance, an historical event, for a broadened view of life and of the responsibilities of pharmacy. It brought me into friendly contact with a host of pharmacists, the leaders in the profession, throughout the country and in some foreign lands. Enjoyable have been the friendships established, delightful the correspondence enjoyed and of inestimable value the knowledge of human nature as well as that of the scientific facts gained by the contact and association with such men as Maisch, Diehl, Remington, Ebert, Caspari, Sheppard, Hallberg, Oldberg, Eliel, Good, Patton, Holzhauer, Alpers, Hancock, Trimble, Dunn, Ryan, Wilbert and Francis, all of whom have answered the last call as well as those who remain as our contemporaries. There is nothing equal to an active interest in your trade or professional organization for developing one's self. It may not be possible to estimate the return by financial standards but there is a gratification, a self-satisfaction as the reward that comes from service and this is the greater if such service has been freely given without expectation of any compensation. As Penn wrote; 'He who does good for good's sake seeks neither praise or reward; tho' sure of both at last.'

"Since my induction into the service of the American Pharmaceutical Association, I have been kept on active duty for a great portion of the time. At various times I have served upon many of its committees, as Councilor and Director, and as Chairman of the Section on Practical Pharmacy and Dispensing. In 1913, I was elected President and now comes a further signal honor and distinction in the

award that is made to me this evening. Possibly, I now have 'earned the right to a rest' but I will not consider this function as an admonition to cease my labors in behalf of pharmacy as such a command will be respected only when it is issued by Divine authority that 'Now the day is over.'

"In presenting to you some of the incidents from the gallery of memory, it is sincerely hoped that the purpose and moral that it is desired to illustrate will be perceived and that these personal narratives have not wearied you. The American Pharmaceutical Association, its ideals and the association with its members has an influence upon the career of every active member. The child forms its habits by imitating those that it sees. Each person intuitively imbibes and adopts some of the thoughts and ideals expounded in his presence so that our characters are materially affected and our careers shaped by our associations. Goethe aptly expressed the thought: 'There is no teaching to compare with what we derive from intercourse with others.'

"The declaration of Genesis that 'It is not good that man should be alone' is capable of another interpretation than that of his need for a help-meet of the opposite sex, the truth of which no married man dare deny. Equally true is the assertion that man lives not for self alone. Modern society is based upon the universal desire for association, for companionship, and the interdependence of each person upon the others.

"Someone has said that pharmacy is in the melting pot. Cannot the same be said with equal certainty of every other profession? The need for refinement, for reformation in practices, has been the prime motive, the incentive that caused the formation of every pharmaceutical association. It has been the special function of the American Pharmaceutical Association, since its inception in 1852, to keep alive the refining fires of pharmacy and to mould and so shape each refined ingot that it shall serve its purpose of aiding in the scientific and ethical progress of the profession. We can point with pride to some of these achievements and to the progress made often under trying circumstances.

"One dare not peer too deeply into the crystal globe or to prophesy too boldly the future of pharmacy. However we must have a vision to discern the possibilities and having discerned what is right must have the courage of our convictions and advocate the adoption. There are numerous signs in the heavens that pharmacy is finding itself and that it is assuming its rightful place among the professions. The function of this evening is one unmistakable sign. Even more so is the assumption of its proper share in scientific research and nothing has been so significant of the determination of pharmacy to recognize and maintain its appropriate place among the scientific and professional organizations than the movement for a national pharmacy building, in which the interests of pharmacy shall be housed and from which pharmaceutical research and publications shall be promulgated, that is now taking definite shape.

"Pharmacy is a distinct and honorable calling and the importance of its service has been recognized from time immemorial. The most ancient records show that the practice of this art was carried on by a specially educated class of priests. The Egyptians and the Hebrews both followed such a custom. It seems strange that a practice so long established should in more recent times have become a matter of dispute and that we must now contend for the reëstablishment as a

principle that the compounding and dispensing of medicines is exclusively a function of pharmacy and that this service so essential to society must be performed only by those specially educated and qualified as pharmacists. It is incumbent upon each pharmacist to appreciate that he has a direct, personal and moral obligation to conduct his business and to perform his services in a strictly ethical manner so as to honor his profession. Pharmacy must shortly purge itself, by drastic methods if necessary, of those who bring discredit upon its code of ethics.

"While we must recognize the interdependence of pharmacy with medicine and with chemistry in some of its aspects we must also realize that it has its own distinct fields of usefulness awaiting cultivation. The obligation to supply more exact medicines and scientifically accurate methods of preparation it is discharging faithfully. As a distinct profession, it must develop its own ideals and maintain these with honor, dignity and sincerity; it will be belittling to its standards to permit our profession to become simply a copyist and imitator of others.

"One of the most serious problems confronting pharmacy at this time is the mass of restrictive laws and the volume of departmental regulations issued for their enforcement. Without properly studying or enforcing laws already on the statute books that amply control the situation, there is a fanatical propaganda for further and unnecessary legislation. There is something radically wrong when legislation destined to be beneficial and to improve the moral tone of the nation results in widespread disrespect for the law and a wholesale violation of the criminal code and with regulations, likewise, which while interfering with the necessary practices of a profession and its scientific progress stimulate, nevertheless, unethical practice and bring into the calling many undesirables whose elimination becomes an added responsibility.

"On a former occasion, I addressed the New York branch upon the possibilities of pharmaceutical research. The continual expansion of our materia medica is still further broadening this boundless field of opportunity. The introduction into medicine of new chemicals often of uncertain composition and more frequently of undetermined pharmacologic action, the application of the vitamines and of the endocrines and of the other animal organ drugs that are now becoming extensively used are but some of the newer remedies that are calling for investigation. Moreover, scarcely any article in our materia medica has been completely investigated and the scientific and commercial problems awaiting such study are too numerous for tabulation. The call for research is an appeal for the most altruistic, the highest public service that pharmacy can render. The organization of research committees and the guarantee of a thoroughly equipped research laboratory in the proposed new national building are evidences that pharmacy is awakening to this professional responsibility and field of greater usefulness. The development of the corps of workers required to till the ground is the immediate need. Each generation inherits from its predecessors an ever-increasing fund of knowledge and must transmit this with its own augmentation to its successors. We are thus indebted to our predecessors and obligated to our contemporaries and to our successors.

"I have already acknowledged my personal gratitude to the teacher and friend whose image is impressed upon this medal. It is especially appropriate that the name and likeness of Remington should be permanently associated with this award of honor. Faithfully he carried out his part and performed his duty as

worker, teacher and leader. As a teacher he was preëminent in his ability to impart instruction in the theories and practices composing the art of pharmacy and no other man, to this day, has taught as many students in this art and so successfully impressed on them his personality. His book on this subject is the leading textbook in English. His association as co-editor in the recent editions of the United States Dispensatory gave increased vigor, authority and prestige to the volume. The eighth and ninth revisions of the United States Pharmacopœia were prepared and published under his chairmanship and it was his genius that cast the model and made possible the scientific advancements that placed our American Pharmacopœia in the fore rank of such national works and earned for it the title of the 'autocrat of the Pharmacopœias.' At home and abroad he was hailed as the leading American pharmacist. No one wielded a stronger or more magnetic influence in our associations. His great love and interest in all matters pertaining to pharmacy continued until the final call came. The last interview that I had with him was but a few weeks before his decease. Propped up in bed, with the evidence of his serious illness showing in his countenance, his indomitable will never failed and with energy he discussed the efforts being made to create a pharmaceutical corps in the U. S. Army and he planned how he might aid in presenting the need therefor to Surgeon-General Gorgas.

"Each of those who have been honored by the award of this medal represents a different type of service to pharmacy. The first medal was awarded to Dr. James H. Beal whose unique ability has made him the national leader in all matters of legislation and public welfare affecting pharmacy and whose influence in the shaping of pharmaceutical ideas is paramount. The second was awarded to Prof. John Uri Lloyd, author and teacher, whose contributions to colloidal chemistry and to our knowledge of the history, botany and pharmacognosy of American vegetable drugs, were worthily honored by this recognition. The third award was to Prof. Harry Vincome Arny, the present president of the American Pharmaceutical Association, whose noteworthy service in behalf of pharmaceutical research merited the honor. The fourth award was made last year to that distinguished teacher of materia medica, botanist and explorer, Dr. Henry H. Rusby. I have been endeavoring to determine to my own satisfaction how the committee appraised the services of the present recipient and in answer to queries propounded by several friends I was not able to point out any particular accomplishment of the year, any masterpiece, that would deserve this signal honor. The speakers of this evening have informed you that the award was made because I was a pharmacist. I am indeed happy to accept their judgment. Self-respect prevents me from underestimating whatever service it has been my privilege to render to pharmacy and modesty forbids my overestimating the value thereof.

"It is a peculiar coincidence that the five recipients of this award are all members of the New Jersey Pharmaceutical Association and that three of these reside within the borders of the 'garden state.' "

"Mr. Toastmaster, I appreciate the distinction of this occasion above all of the honors that have come to me. Cherished will ever be the memory of this evening."

"Mr. Diner, I accept with sincere thanks the medal that you have presented to me. It signifies much and I esteem it and the kind words you have spoken as priceless gifts. You and the Association that you represent may rest assured that it will prove a further incentive to work and a personal reconsecration so long as strength does permit to the service of our profession."

# WHAT SHOULD A PHARMACIST KNOW?

## The Commonwealth Study of Pharmacy.

BY JULIUS A. KOCH.

From the beginning the chief duty that has characterized the pharmacist is the compounding of physicians' prescriptions. This duty in conjunction with the ordinary sale of drugs over the counter made it highly necessary for the pharmacist to acquaint himself with a vast amount of specific knowledge regarding drugs, if he hoped to discharge his duties properly.

In the study of pharmaceutical education from the functional point of view it was decided, first, to make a thorough canvass of the knowledge required to compound prescriptions properly, taking into account everything from the method of receiving the prescription until it leaves the hands of the compounder as a thoroughly finished product.

The vast amount of information often required to compound even a fairly simple prescription is astonishing, and a consideration of the material afforded by a study of thousands of prescriptions should furnish a basis for determining the specific knowledge necessary for their safe and efficient compounding.

In a like manner the questions asked of the pharmacist in the daily routine of drug store practice will be grouped and studied with the idea of determining the background necessary in order that the pharmacist may answer these questions intelligently.

The Latin of the prescription, modes of manufacture and knowledge of physiology and anatomy will all in turn be exhaustively considered. In addition there will be the matter of the necessary apparatus or equipment for the pharmacist which will be based upon the actual needs in general drug store practice.

Since a proper equipment of ethical principles is a prime requisite for a well-ordered career, and since a knowledge of sound business principles is essential for the successful conduct of any enterprise, the ethics and economics of the store must be carefully studied.

Convinced that first-hand information is desirable, which information can be secured only by actual visit to the pharmacy, the committee has commenced the survey of one hundred pharmacies in each of fifteen centers in the United States. This will include cities in the East, West, North and South and drug stores of all representative kind, such as rural drug stores, department store pharmacies, hospital pharmacies, chain stores, neighborhood stores, ethical pharmacies, Polish, Jewish, Italian, Negro stores, etc.

The question of research in all its applications will be studied to determine, if possible, the extent to which encouragement of the spirit of research is necessary and desirable in order that the pharmacist and his profession may progress in keeping with his needs and deserts.

Further, a summation of the knowledge a pharmacist should possess in the opinion of physicians, dentists, veterinary surgeons, health officers and manufacturing pharmacists will furnish valuable material for study. These data together with the material indicated above, should, if properly interpreted, serve as a satisfactory basis for determining the specific knowledge a pharmacist should have in order to serve the public fully.

# THE DEPARTMENT OF THE AMERICAN CONFERENCE OF PHARMACEUTICAL FACULTIES

## THE REAL OBJECTIONS TO THE THREE-DAY-A-WEEK PLAN.*

BY EDWARD SPEASE.[1]

The three-day-a week plan of education in schools of pharmacy is a hybrid—new ideas of education grafted on the old apprentice system. The apprentice system gasped its last after a long, unequal struggle with the trend of modern business to rush, bustle, and efficiency. The modern proprietor has not time to give his clerks the painstaking instruction and training and to instil in them the pride of craft that was formerly given to apprentices. And so this failure of the apprentice system, together with the demand for more exact knowledge, brought about the hybrid growth of the work and school every-other-day plan. It is to the advantage of the retail druggist because it gives him cheap help that is fairly likely to stay with him for at least two years.

In the ordinary, medium-sized drug store a man must be able to sell goods as well as to handle drugs and fill prescriptions. Therefore the demand that pharmacists shall have had retail store experience. But is this plan the ideal way to get experience? Our school, like many others, discontinued the every-other-day plan of school several years ago, because we are convinced that it is not the best we can offer to future pharmacists, for the following reasons:

With the general raising of standards of education and the growing demand that a man "know his stuff," three days a week for two years is not nearly long enough to educate a pharmacist. Indeed, we have found two full years, with school every day in the week, too crowded, and we shall be glad when the time comes to go to the three-year course as a minimum, as it will enable us to come closer to giving the student the proper training. Of course four years—a regular college course—would be better. Instead of short quiz courses to give the student just enough to pass the Board we are trying to give him real courses of regular university length and grade, that will furnish him a firm understanding and sure basis for whatever work he wishes to do. It is not possible to do this when school is in session only every other day.

Some schools will raise the counter argument, "We give our students as many actual hours of school work in three days as you give in five and a half." Here at Western Reserve University our students in pharmacy average 28 actual hours of lecture, quiz and laboratory a week. Crowded into three days this would mean more than nine actual hours a day. Pedagogically this is unsound. Psychology shows that there is a fatigue point beyond which the mind does not assimilate knowledge or function efficiently. If the steel mills have come down to the eight-hour day for manual labor, surely we cannot expect a man to do continuous mental work for more than that.

A second objection to this plan is that the attention and interest of the student are too much divided. In the first place he usually works the night before school,

* Submitted by C. B. Jordan, Chairman Executive Committee, A. C. P. F.

[1] Dean, School of Pharmacy, Western Reserve University, Cleveland, Ohio.

and so has no time to study. A day or more elapses between his classes and, busy with the store routine, he has forgotten—lost the thread of his studies. When he comes back to school he loses time getting into the spirit of things collecting his wits and finding out what he is doing. It is like having the Monday morning after vacation every day. And again, if the student gets behind with his laboratory work, for example, there is no time to slip in an extra hour or two, as the other days belong to his drug store job.

The chief argument for the system, of course, is that it gives the student the drug store experience that he needs while he is going to school. That argument presupposes that all drug store experience is of value to the future pharmacist, and of course we all know that this is not true. If we could only pick the store that each man should work in and impress upon the proprietor or the man in charge his duty toward his clerks, we could be sure of the value of drug store experience, but too many men are just looking for the cheap help above mentioned.

The state of Virginia has done away with all drug store experience whatsoever as prerequisite for registration. It says to the school of pharmacy, "the entire responsibility rests with you to make pharmacists." Our plan here in Cleveland has been somewhat different. We are giving each student interneship work in the hospital pharmacies and dispensaries. This impresses him particularly with his primary function as a pharmacist and gives him training in this function, applied directly to the patient. We do, however, recognize the value of the proper kind of retail experience, and we find that we can go farther with a man who has had such experience. Ultimately we may extend this interneship in the case of students who have not had actual retail experience to placing them in carefully selected drug stores, supervising their work so that they may obtain the greatest possible good from it. Such work will supplement, however, and not take the place of the regular school work.

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## NATIONAL CONFERENCE ON PHARMACEUTICAL RESEARCH.

### RESEARCH INFORMATION* (APRIL 1924).

A census of the research work now being performed by instructors and students of American colleges of pharmacy, either as candidates for higher degrees or as research fellows, brings out the fact that 29 persons have been so engaged during the current year. A tabulated list of these pharmaceutical research workers follows:

COLUMBIA UNIVERSITY COLLEGE OF PHARMACY.

C. W. Ballard, M.A., Phar.D., Candidate for Ph.D., Columbia Univ.—
Pharmacology of the genus *Erythroxylon*.

W. J. Bonisteel, B.S., Candidate for M.S., Columbia Univ.—
Pharmacognosy of Colombia cinchonas.

H. C. Kassner, B.S.
(Plaut Fellow N. Y. C. P.)
Ph.D. Univ. London, November, 1923—
Histological and chemical examination of the seeds of *Ipomœa hederacea*.

Hugo H. Schaefer, Phar.D.
Candidate for Ph.D., Univ. Berne—
Wax acids and coloring matter of stick lac.

* H. V. Arny, Chairman National Conference on Pharmaceutical Research, 115 W. 68th St., New York City.

UNIVERSITY OF MICHIGAN COLLEGE OF PHARMACY.

W. J. McGill, M.S., L. R. Wagener, M.S. (A. Ph. A. Research Grant)—
Electrometric methods of alkaloidal determinations.

Theodore F. Thorsberg, B.S.
Candidate for M.S., Univ. Mich.—
Composition of glycerite of bismuth.

UNIVERSITY OF MINNESOTA COLLEGE OF PHARMACY.

C. V. L. Netz, M.S.
Candidate for Ph.D., Univ. Minn.—
Effects of various charcoals on alkaloidal solutions.

PHILADELPHIA COLLEGE OF PHARMACY AND SCIENCE.

L. K. Sung, A.B, M.D.—
Botanical and chemical characteristics of Chinese cardamoms.

Leon Wasserman (Kilmer Research Fellow)—
Occurrence and significance of silicon in drugs.

UNIVERSITY OF WASHINGTON COLLEGE OF PHARMACY.

G. H. Needham, B.S. (A. A. Denny Fellow)
Candidate for M.S., Univ. Wash.—
Howard count on determination of spoilage of canned goods.

Paul Cheng, B.S.
Candidate for M.S., Univ. Wash.—
Analysis of some northwestern plants.

Helen Eheim, B.S.
Candidate for M.S., Univ. Wash.—
Determination of alcohol in drug products.

Dorothy Gaston, B.S.
Candidate for M.S., Univ. Wash.
Pharmacology of synthetic esters.

F. J. Goodrich, M.S.
Candidate for Ph.D., Univ. Wash.—
Pharmacology of some new urethane derivatives.

Mrs. O. H. Nelson, M.S.
Candidate for Ph.D., Univ. Wash.—
Commercial production of benzaldehyde.

Harriet Snidow, B.S.
Candidate for M.S., Univ. Wash.—
Pharmacy of acetylsalicylic acid and allied compounds.

H. A. Shoemaker, B.S.
Candidate for M.S., Univ. Wash.—
Pharmacology of hydrazine derivatives.

UNIVERSITY OF WISCONSIN COURSE IN PHARMACY.

F. J. Bacon, M.S. (Hollister Fellow)
Candidate for Ph.D., Univ. Wisc.—
(*a*) Genetic problems in the biochemistry of mints.
(*b*) Digitalis.

J. G. Dellinger, A.B. (A. J. Marshall Fellow)
Candidate for M.S., Univ. Wisc.—
Chemistry of the seeds of *Bixa Orelanna*.

G. C. Jenison, M.S. (Fritsche Bros. Fellow)
Candidate for Ph.D., Univ. Wisc.—
Reduction of pulegone and other problems in the biochemistry of mints.

K. H. Rang, B.S. (A. Ph. A. Research Grant)
Candidate for M.S., Univ. Wisc.—
Decolorized tincture of iodine.

W. L. Rintelman, B.S. (Newport Chem. Co. Fellow)
Candidate for M.S., Univ. Wisc.—
Guaiacol derivatives.

B. V. Christensen, B.Ph.
Candidate for M.S., Univ. Wisc.—
Monarda studies.

G. L. Jenkins, M.S.
Candidate for Ph.D., Univ. Wisc.—
Datura.

J. C. Liu, B.S.
Candidate for M.S., Univ. Wisc.—
Chinese rhubarb.

E. T. Motley, M.S.
Candidate for Ph.D., Univ. Wisc.—
Precipitated sulphur.

A. H. Neumann, B.S.
Candidate for M.S., Univ. Wisc.—
Seidlitz powder.

J. F. Sabin, B.S.
Candidate for M.S., Univ. Wisc.—
Chlorine water.

# PHARMACEUTICAL FORMULAS

## PROPOSED FOR "BOOK OF UNOFFICIAL FORMULAS, A. PH. A."

The formulas heretofore published will be found in Volume I, JOURNAL A. PH. A., pp. 169, 366, 505, 637, 760 and 1307; Volume V, pp. 309, 422, 529, 631, 748, 862, 991 (see also p. 1129), 1126, 1265 and 1397; Volume VI, pp. 79, 194, 298, 398, 486, 563, 643, 729 and 823. See also Volume X, pp. 292, 382, 468, 534, 628; Volume XI pp. 551, 624; Volume XIII, p. 357.

For list of committee members and committees see April issue, 1921, p. 292; also refer to Roster on p. X of this issue. Suggestions for formulas, and comments on those published are invited. They may be sent to a member of the Committee or to Chairman J. Leon Lascoff, 1223 Lexington Ave., New York, N. Y.

### No. 749.

#### VIENNA LAXATIVE EMULSION.

(Emulsio Laxativa Viennensis.)

| | |
|---|---|
| Emulsion of Almond | 120.0 |
| Manna | 40.0 |
| Cinnamon Water | 5.0 |

### No. 750.

#### ALKALINE SOLUTION OF TAR.

| | |
|---|---|
| Pine Tar, | |
| Sodium Carbonate, of each | 10.0 |
| Water | 1000.0 |

### No. 751.

#### UNNA'S ZINC-ICHTHYOL GELATIN.

(Gelatinum Zinco-Ichthyoli, Unnaum.)

| | |
|---|---|
| Gelatin | 15.0 |
| Zinc Oxide | 10.0 |
| Glycerin | 30.0 |
| Ichthyol | 2.0 |
| Water | 43.0 |

### No. 752.

#### ERYSIPELAS GLOBULES.

(Globuli ad Erysipelas.)

| | |
|---|---|
| Alum | 4.0 |
| Ammonium Chloride | 2.0 |
| Calcium Carbonate | 5.0 |
| Camphor | 1.0 |

Mucilage of Starch, sufficient.

Triturate the solids and make into globules, weighing about half ounce, with the mucilage of starch, and dry.

### No. 753.

#### MENTHOL LINIMENT.

(Linimentum Mentholis, Liebreich.)

| | |
|---|---|
| Menthol | 5.0 |
| Olive Oil | 45.0 |
| Lime Water | 50.0 |

### No. 754.

#### RADEMACHER'S COPPER MIXTURE.

(Mistura Cuprica, Rademacher.)

| | |
|---|---|
| Tincture of Copper Acetate | 5.0 |
| Acacia | 30.0 |
| Cinnamon Water, | |
| Water, of each | 175.0 |

### No. 755.

#### LIEBREICH'S SLEEPING DRAUGHT.

(Mistura Somnifera, Liebreich.)

| | |
|---|---|
| Chloral Hydrate | 5.0 |
| Syrup of Orange Peel, | |
| Water, of each | 20.0 |

### No. 756.

#### RHATANY LOZENGES.

(Pastilli Ratanhiæ. Troches Krameria.)

| | |
|---|---|
| Extract Krameria | 6.5 |
| Sugar | 65.0 |
| Tragacanth | 1.6 |

Orange Flower Water, enough to make 100 troches.

### No. 757.

#### HUFELAND'S OBSTRUCTION PILLS.

(Pilulæ Contra Obstructiones, Hufelandi.)

| | |
|---|---|
| Oxgall, | |
| Castile Soap, | |
| Extract of Taraxacum, | |
| Rhubarb, of each | 5.0 |

Make 150 pills.

### No. 758.

#### ZINC PHOSPHIDE PILLS.

(Pilulæ Zinci Phosphidi.)

| | |
|---|---|
| Zinc Phosphide | 0.8 |
| Powdered Licorice Root | 6.0 |
| Powdered Althæa | 1.0 |
| Glycerin | 1.5 |

Syrup of Acacia, to make 100 pills.

No. 759.

GLYCERINATED TAR.

| | |
|---|---|
| Pine Tar, | |
| Yolk of Egg, of each | 25.0 |
| Glycerin | 50.0 |

No. 760.

POWDER FOR HEMORRHOIDS.

(Pulvis Antihemorrhoidalis.)

| | |
|---|---|
| Rhubarb | |
| Sublimed Sulphur | |
| Magnesium Carbonate, of each | 4.00 |
| Potassium Bitartrate | |
| Oleosacch. of Fennel, of each | 15.00 |

No. 761.

CREOSOTE PILLS.

(Pilulæ Kreosoti, Wolff.)

| | |
|---|---|
| Creosote | 4.00 |
| Althæa | 3.00 |
| Gentian | 4.00 |
| Powd. Extract of Glycyrrhiza | 6.00 |
| Glycerin | 2.00 |

Powd. Licorice Root, enough to make 150 pills.

No. 762.

HAMBURGER TEA.

(Species Hamburgenses.)

| | |
|---|---|
| Senna | 200.00 |
| Manna | 100.00 |
| Coriander | 50.00 |
| Tartaric Acid | 10.00 |

No. 763.

DIURETIC TINCTURE.

(Tinctura Diuretica, Hufelandi.)

| | |
|---|---|
| Oil of Juniper | 8.00 |
| Tincture of Digitalis | |
| Spirit of Nitrous Ether, of each | 40.00 |

No. 764.

BISMUTH OINTMENT.

(Unguentum Bismuthi.)

| | |
|---|---|
| Bismuth Hydroxide | 50.00 |
| Oleic Acid | 200.00 |

Digest on water-bath for one hour.

No. 765.

ALMOND OIL EMULSION (Ph. Austr.).

(Emulsio Oleosa.)

| | |
|---|---|
| Expressed Oil of Almond | 10.00 |
| Acacia | 5.00 |
| Syrup | 10.00 |
| Water | 175.00 |

No. 766.

INFANT'S LAXATIVE (Ph. Austr.).

(Hydromel Infantum.)

| | |
|---|---|
| Compound Infusion of Senna | 30.00 |
| Syrup of Senna and Manna | 10.00 |

No. 767.

SACCHARATED CAMPHOR (Ph. Austr.).

(Pulvis e Camphora.)

| | |
|---|---|
| Camphor | 10.00 |
| Acacia | 6.00 |
| Sugar | 10.00 |

No. 768.

LAXATIVE PILLS (Ph. Austr.).

(Pilulæ Laxantes.)

| | |
|---|---|
| Aloes | 10.00 |
| Jalap | 15.00 |
| Castile Soap | 5.00 |
| Anise | 2.50 |

Water, enough to make pills 0.2 each.

No. 769.

CEVADILLA OINTMENT (Ph. Austr.).

(Unguentum Sabadillæ.)

| | |
|---|---|
| Ointment | 100.00 |
| Powd. Cevadilla Seed | 25.00 |
| Oil of Lavender | 1.00 |

No. 770.

ENEMA OF EPSON SALT.

(Enema Magnesiæ Sulphatis, B. P. 1885.)

| | |
|---|---|
| Magnesium Sulphate | 60.00 |
| Mucilage of Starch | 900.00 |
| Olive Oil | 60.00 |

No. 771.

CAPSICUM OINTMENT.

(Unguentum Capsici, B. P. 1914.)

| | |
|---|---|
| Capsicum Fruit | 25.00 |
| Hard Paraffin (U. S. P.) | 10.00 |
| Soft Paraffin (U. S. P.) | 75.00 |
| Prepared Lard | 10.00 |

No. 772.

CREOSOTE MIXTURE (B. P. C.).

(Mistura Creosoti.)

| | |
|---|---|
| Creosote | 1.00 |
| Simple Syrup | 30.00 |
| Spirit of Juniper | 1.00 |
| Water, enough to make | 480.00 |

Shake the creosote with 420 cc. of water; add the syrup and the spirit of juniper and sufficient water to make 480 cc.

No. 773.

INFUSION OF CALUMBA (Ph. Brit.).

(Infusum Calumbæ, B. P.)

| | |
|---|---|
| Calumba Root | 50.00 |
| Distilled Water, boiling | 1000.00 |

Infuse in a covered vessel for half an hour; strain.

No. 774.

INFUSION OF LINSEED.

(Infusum. Lini, B. P. C. Linseed Tea.)

| | |
|---|---|
| Linseed | 3.50 |
| Powdered Licorice Root | 1.14 |
| Boiling Water | 100.00 |

Let stand for two hours; then strain.

No. 775.

INFUSION OF QUASSIA (Ph. Brit.).

| | |
|---|---|
| Quassia Wood | 100.00 |
| Cold Water | 1000.00 |

Infuse in covered vessel 15 minutes; strain.

No. 776.

COMPOUND LEAD OINTMENT.

(Unguentum Plumbicum Compositum. Pile Salve.)

| | |
|---|---|
| Saffron | |
| Camphor, of each | 1.00 |
| Oil of Hyoscyamus, infused | 7.50 |
| Lead Ointment | 20.00 |

No. 777.

TANNIN SUPPOSITORIES (Ph. Brit.).

(Suppositoria Acidi Tannici.)

| | |
|---|---|
| Tannic Acid | 2.40 |
| Cacao Butter | 10.00 |

Divide into 12 suppositories.

No. 778.

ACID AROMATIC TINCTURE (Ph. Brit.).

(Tinct. Aromatica Acida.)

| | |
|---|---|
| Aromatic Tincture | 96.00 |
| Sulphuric Acid | 4.00 |

No. 779.

ENEMA OF STARCH (Fr. Codex).

(Enema Amylaceum.)

| | |
|---|---|
| Starch | 30.00 |
| Cold Water | 200.00 |
| Mix well and add | |
| Boiling Water | 800.00 |

No. 780.

LIP POMADE (Fr. Codex).

(Ceratum Labiale. Pomade pour les levres.)

| | |
|---|---|
| White Wax | 50.00 |
| Almond Oil | 100.00 |
| Carmine | 0.50 |
| Oil of Rose | 0.60 |

No. 781.

PURGATIVE ENEMA.

(Lavement Purgatif. Fr. Codex).

| | |
|---|---|
| Senna Leaves | 30.00 |
| Boiling Water | 1000.00 |

Let stand half an hour, then strain and add

| | |
|---|---|
| Sodium Sulphate | 30.00 |

No. 782.

ARSENICAL PILLS (Fr. Codex).

(Pilulae Arsenicales. Tanjore Pills.)

| | |
|---|---|
| Arsenous Acid | 0.50 |
| Black Pepper | 5.00 |
| Acacia | 1.00 |

Water, enough to make 100 pills.

No. 783.

ETHEREAL SPIRIT OF CAMPHOR (Fr. Codex).

(Tinctura Camphoræ Aetherea.)

| | |
|---|---|
| Camphor | 100.00 |
| Ether | 900.00 |

No. 784.

CREOSOTE MIXTURE (B. P. C.).

(Mixtura Creosoti, Squire's.)

| | |
|---|---|
| Creosote | 1.00 |
| Almond Oil | 15.00 |
| Syrup of Orange | 30.00 |
| Acacia | 6.00 |
| Water, enough to make | 240.00 |

Mix the creosote with the oil, rub with the acacia; add at once 12 cc. of water; then add the rest of the water and syrup.

No. 785.

MENTHOL LINIMENT (B. P. C.).

(Linimentum Mentholis.)

| | | |
|---|---|---|
| Menthol | Gm. | 20.00 |
| Chloroform | cc. | 25.00 |
| Olive Oil, enough to make | cc. | 100.00 |

No. 786.

EMULSION OF PETROLATUM WITH HYPOPHOSPHITES.

(Emulsum Petrolati cum Hypophosphitibus, B. P. C.)

| | |
|---|---|
| Liquid Petrolatum, heavy | 30.00 |
| Calcium Hypophosphite | 1.83 |
| Sodium Hypophosphite | 1.83 |
| Acacia | 15.00 |
| Tragacanth | 1.36 |
| Oil of Cinnamon | 0.20 |
| Elixir of Saccharin | 0.33 |
| Water, enough to make | 100.00 |

# PROCEEDINGS OF THE LOCAL BRANCHES

**"All papers presented to the Association and Branches shall become the property of the Association with the understanding that they are not to be published in any other publication prior to their publication in those of the Association, except with the consent of the Board of Directors."—Part of Chapter VI, Article VI of the By-Laws.**

**Article IV of Chapter VII reads: "Each local branch having not less than 50 dues-paid members of the Association, holding not less than six meetings annually with an attendance of not less than 9 members at each meeting, and the proceedings of which shall have been submitted to the JOURNAL for publication, may elect one representative to the House of Delegates."**

**Reports of the meetings of the Local Branches should be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter.**

## BALTIMORE.

The Baltimore Branch of the A. Ph. A. has held three interesting and well-attended meettings this year.

The first meeting was held on January 22, at the Hotel Emerson, Dr. Herman Engelhardt presiding. The speaker of the evening was Dr. Charles C. Plitt, Professor of Botany and Materia Medica of the School of Pharmacy of the University of Maryland, who told of his vacation work in Bermuda, illustrating the incidents of the trip by slides. He also showed the location of the laboratories, the local vegetation and flora of Bermuda, and described the work he was able to accomplish.

The February meeting was held on Thursday, the 28th, at the Hotel Emerson, John C. Krantz, Jr., presiding.

Dr. Robert L. Swain, Deputy Drug Commissioner of Maryland, gave some interesting statistics concerning the pharmacists of Maryland in connection with the enforcement of the Pharmacy Law. These statistics included the number of pharmacies in the state and the population served, with analogies of the pharmaceutical service of the United States as a whole, of some of our representative sister states, and of Maryland; as well as a record of the small number of pharmacies owned by assistant pharmacists or persons other than registered pharmacists. This analysis of statistics also showed the number of pharmacists of the state who hold Alcohol Permit I and those who hold Alcohol Permit H only.

A general discussion of these statistics and pending legislative bills followed, participated in by Messrs. Harris, Meyers and Woehner.

The second topic of the evening was "Some Features of Present-Day Pharmaceutical Education" by Dr. E. F. Kelly, who outlined what has recently been accomplished along this line, and what is being planned.

The March meeting was held on the 27th, at the Hotel Emerson, John C. Krantz, Jr., presiding.

The speaker of the evening was Dr. M. Karasch, Professor of Organic Chemistry of the School of Pharmacy of the University of Maryland, his subject being "Chemistry in the Treatment of Diseases."

The speaker gave numerous illustrations of the triumphs of systematic chemistry in the search for organic compounds for specific diseases. The interesting theory of life as a chemical reaction was elucidated, with special emphasis upon the numerous suggestions that have been announced for the retarding of the chemical reaction of life, thus prolonging our stay upon this planet. The synthesis of few of the potent active principles of animal glands was discussed and the speaker pointed out the immensity of the practically unexplored field in therapeutic activity.

This meeting was well attended by the students of the School of Pharmacy of the University of Maryland, who participated in the discussion which followed the lecture. Dr. Neil E. Gordon, John C. Krantz, Jr., Chas. C. Neal and Dr. Herman Engelhardt also participated in the discussion—he outlined the history of the preparation and use of phenacetine.

The election of officers was held at the January meeting. Mr. F. F. Berg was elected president, but as he has severed his Baltimore connections and taken up residence elsewhere, his resignation was accepted at the March meeting. Mr. John C. Krantz, Jr., was elected vice-president at the January meeting, and the office of president is now being filled by

him. The officers of the Baltimore Branch of the A. Ph. A. for 1924 are as follows: President, John C. Krantz, Jr., 1759 E. Preston St., Baltimore; Secretary-Treasurer, B. Olive Cole, Greene & Lombard Sts., Baltimore; Chairman Committee on Membership, Wilmer H. Schulze; Chairman Committee on Professional Relations, Chas. L. Meyer; Chairman Committee on Science & Practice of Pharmacy, Dr. Daniel Base; Chairman Committee on Education and Legislation, Dr. E. F. Kelly.

The April meeting will be held at the Hotel Emerson on the 30th; Dr. David I. Macht will be the speaker, on "Contributions to the History and Philosophy of Pharmacotherapy."

B. OLIVE COLE, *Secretary-Treasurer.*

## CHICAGO.

The 142nd meeting of the Chicago Branch of the American Pharmaceutical Association was held Friday evening, April 11, at the University of Illinois School of Pharmacy Building. President L. E. Warren called the meeting to order and introduced Chief R. E. Doolittle of the Central District, United States Bureau of Chemistry. Mr. Doolittle, who is also president of the Association of Agricultural Chemists, presented to the Branch a most excellent talk on the subject "Food and Drug Frauds." He explained that for the administration of the Federal Food and Drugs Act the country had been divided into three great districts—the Eastern District with headquarters at New York, the Central District with headquarters at Chicago, and the Western District with headquarters at San Francisco. Also, there is located at each important commercial distributing point, an inspector who reports to the headquarters of his district. In the Central District there are probably 150 employees including 50 inspectors.

The speaker further called attention to the important fact that the major part of their activities were constructive and coöperative rather than in the actual apprehension and prosecution of offenders under the Food and Drugs Act. The federal law applies only to interstate commerce but the state and local laws dealing with pure foods and drugs usually work in coöperation with the Federal officials, resulting in a much more efficient enforcement of all of these laws. The central states are to be congratulated upon the very progressive and active enforcement of these pure food and drug laws.

Of the actual cases of law violations, the majority are simply frauds; a few cases concern materials deleterious to health and may represent spoiled food products.

It should be borne in mind that legal standards in connection with foods and drugs are always minimum standards, and that the mere enforcement of the law will not tend to improve food and drug products. Therefore, the constant aim of the department is along the lines of educating and warning manufacturers and dealers in regard to the quality of their products. It is surprising what a difference in profit even a very small amount of adulteration will mean on a product handled in such immense quantities as flour or butter. When one remembers that an honest manufacturer cannot possibly compete in prices with a dishonest one, it becomes very evident that the tendency to dishonesty sweeps the whole trade in an article, unless this tendency can be overcome and the spirit of honesty be inspired. As an illustration, white wheat flour, which in the ordinary course of manufacture would contain about 12 per cent. of water, is found in commerce to almost universally contain $13^1/_2$ per cent. of moisture. The law permits $13^1/_2$ per cent. of moisture. The manufacturers of this flour to meet competition must see to it that their flour contains as much moisture as that produced by their competitors. Years ago a commercial butter contained 83–85 per cent. of butter fat and slightly more than 10 per cent. of water. The law was made to read that butter must contain not less than 80 per cent. of butter fat. Most of the commercial butter now contains exactly or very slightly more than 80 per cent. of butter fat. The difference is represented in added water.

Some of the very remarkable results from the educational and constructive methods of the department are seen in connection with tomato products. There was a time when practically all catsups and tomato pulps were made from refuse tomatoes. By educational methods patiently applied together with a few sharply applied primitive measures it can now be said that practically none of the tomato catsups and tomato pulps are prepared from other than high-grade tomatoes.

Another serious feature of the preparation of foods is the possibility of including in the canned food disease-producing organisms such as those resulting in botulinus poisoning, typhoid fever, etc. It is the policy of the De-

partment to trace the source of the food products responsible for any such cases of poisoning or other disease as may come to its attention. Three of the worst offenders have been canned oysters, canned olives, and canned spinach. Canned olives in glass have been more dangerous than the same olives canned in tins because the thickness of the glass prevented the heat employed in the sterilization from penetrating the contents of the bottle. Likewise in the canning of spinach the vegetable is packed so densely in the can that the processes must be carried out at a higher degree of heat or for a longer time to insure the absolute sterility of the product. The ruling of the Department now is that where a shipment of canned goods shows spoilage the whole shipment shall be condemned.

Another item of fraud still occasionally practiced is short weight. This has been noticed particularly with butter prints and certain packaged spices.

It is a matter of interest and of gratitude that the great majority of manufacturers, canners, etc., are always ready to listen to the suggestions of the Department and to comply promptly with them.

In regard to drugs, one of the most serious matters arising in recent years is that in connection with the preparation of tablets containing narcotic drugs. It was found that morphine tablets that were labeled to contain $^1/_4$ grain each, contained as little as $^1/_{40}$ of a grain of morphine or even no morphine at all. It was found that a number of disreputable drug and supply houses were practicing this fraud, though it is believed that the practice has been wholly stopped at this time. Persons who follow such practices meet with full prosecution and the most severe penalties.

Careful study is now being made of the vitamine preparations. It frequently happens that not only must expert study be given to such a problem but the experts must themselves first be developed. It is the maxim of the Department that the Government cannot afford to lose a case.

Mr. Doolittle's talk was well received and provoked a lively discussion which was participated in by Professors Clark, Gathercoal, Day, Messrs. Linke, Warren, and others.

E. N. GATHERCOAL, *Secretary.*

## DETROIT.

The April meeting of the Detroit Branch of the American Pharmaceutical Association was held at Ann Arbor, April 11th. A dinner at the Michigan Union preceded the meeting. The members were guests of the Prescott Club of Ann Arbor. After dinner an inspection tour was made of the newly equipped laboratories of the Pharmacy Department of the University of Michigan. Much time was spent by many of the members in reminiscence of their old Alma Mater so dear to their hearts and to the finding of their respective class pictures which proved very interesting to many.

The meeting was called to order by President Crandall. The minutes were read by the Secretary and approved. Chairman Hall, of the membership committee, made a favorable report which added many new members to the branch and dollars to the treasury.

In the absence of Chairman Jones of the program committee, President Crandall announced the May meeting would be given over to the annual Prescription Clinic. He also named a committee on nominations, consisting of Messrs. Webster, Scoville and Stocking to report at the May meeting.

Dr. Edward H. Kraus, Dean of the Pharmacy Department of the University of Michigan, was introduced as the speaker of the evening. His talk on "Some Properties of Crystals" and illustrations was one of the most interesting of the season; the use of the epedioscope in analysis of crystals by projecting them from the microscope on the screen in their own peculiar colors was demonstrated.

Mr. Scoville remarked that no moving picture could have been more perfect or interesting; nature supplied the actors and Dean Kraus and his assistants proved capable operators—the assembly fully agreed. It was shown what wonderful strides have been made by American scientists in this work and the many opportunities in this field.

President Crandall thanked the speaker in behalf of the members for his most interesting and educational talk.

BERNARD A. BIALK, *Secretary.*

## NEW ENGLAND.

A meeting of the New England Branch of the American Pharmaceutical Association was held at the Massachusetts College of Pharmacy on the evening of April 2, with thirty-seven members and guests in attendance. The speaker was Dean Theodore J. Bradley who gave a talk based on the reports published in the JOURNAL OF THE A. PH. A., on the progress

of the revision of the United States Pharmacopœia.

It was voted that the New England Branch contribute one hundred dollars to the Headquarters Building Fund of the American Pharmaceutical Association.

After the meeting a buffet supper was served.

THEODORE J. BRADLEY, *Acting Secretary.*

## NEW YORK.

A special meeting was called by the New York Local Branch of the American Pharmaceutical Association for March 3, 1924, to convene in the lecture hall of the New York College of Pharmacy. Seventy-five members and friends were present. The purpose of the meeting was a discussion of the Price Maintenance Bills. President Smith opened the session, calling attention to the fact that the meeting was really to be held under the direction of the Fraternal Relations Committee of the Branch and therefore relinquished the chair to Chairman Lehman of this committee.

Chairman Lehman then introduced the speaker of the evening, Mr. Chas. Wesley Dunn, who delivered an address on "Price Cutting and How It Can Be Legally Prevented." At the conclusion of the address a considerable discussion followed which terminated in the adoption of the amended motion: "That we endorse the principle of Price Maintenance but are opposed to any bill which includes a government price control clause."

A rising vote of thanks was then extended to the speaker.

Mr. C. A. Lewis followed with a paper on "Price Regulation" which was well received.

Mr. Smith called attention to the Drive about to be conducted for funds for the A. Ph. A. Headquarters Building.

The March, 1924, meeting of the New York Branch of the American Pharmaceutical Association was called to order in the Lecture Hall of the New York College of Pharmacy by President Smith. Eighty members and friends were present.

The minutes of the preceding meeting were read and approved. Treasurer Gerstner presented his report which was approved as read.

*Membership Committee:* The following two applications were received for membership in the Parent Organization. James L. Trainor, 450 Dunham Ave., Mt. Vernon, N. Y; Frederick Alter, 338 Marshall St., Elizabeth, N. J.

*Audit Committee:* Dr. Diner reported all bills paid.

Professor Arny reported that the Remington Honor Medal this year would be presented to Mr. Geo. M. Beringer who has received a majority of the votes of the Committe.

It was moved, seconded and carried that the dinner for the formal award of the Remington Honor Medal should be held on the evening of the April meeting and that Dr. R. P. Fischelis be made Chairman of the Dinner Committee.

### SCIENTIFIC SECTION.

Dr. Diekman brought in a report abstracting various articles consisting of the following: Mistura Anaesthetica; Pomatum Antipyrini; Pomatum Prophylatum; Phosphol; Sufragell; Hexatone; Jekarolin; Oleum Chenopodium and detection of its substitutes; Investigations of adulterations of spices; Distinguishing between various aloes; Reagent for sulphur; New use for sodium cacodylate; Test for diethyl phthalate.

The speaker of the evening, Dr. J. Leon Lascoff, presented a most interesting paper on the work of the Committee on the Recipe Book. His talk was illustrated with numerous slides and samples. The discussion was participated in by a number, including the Editor of the JOURNAL A. PH. A., E. G. Eberle.

After a rising vote of thanks extended to the speaker the meeting was declared adjourned.

HUGO H. SCHAEFER, *Secretary.*

## THE REMINGTON HONOR MEDAL AWARD.

The formal award of the Remington Honor Medal was made the occasion of a Testimonial Dinner to the Medalist, George M. Beringer of Camden, N. J. The dinner, held at the Robert Treat Hotel, Newark, was under the direction of the New York Branch A. Ph. A., by which the memorial was founded and the presentation of the medal is a most interesting pharmaceutical event. Dr. Robert P. Fischelis was Chairman of the Dinner Committee, who arranged an excellent menu. New York, New Jersey and Pennsylvania pharmacists were well represented and Ex-President and Mrs. Samuel L. Hilton came from Washington to pay tribute to the guest of honor. Mrs. Beringer graced the occasion by her presence. Telegrams and letters of regret because of inability to attend were received from various sections; among these were messages from the absent medalists—James H. Beal and John

Uri Lloyd; all of them expressed congratulations and esteem.

After the dinner had been served, President-elect Charles W. Holton of the A. Ph. A. welcomed the guests and then introduced President Henry B. Smith of the New York Branch A. Ph. A. as the toast-master of the evening. He addressed himself to the guest of honor in words of high regard and introduced the speakers who responded to the toasts assigned them:

President H. V. Arny of the American Pharmaceutical Association spoke of the medalist's record as an organization worker, not only within associations but also his accomplishments in committee work and research in particular—as a pharmacist who has the courage of his convictions, who sometimes voiced minority views and brought the majority to his conclusions.

President Daniel H. Hills of the New Jersey Pharmaceutical Association dwelt upon the work Mr. Beringer had accomplished for pharmacists by his successful efforts in legislative matters; he stood in the front rank of pharmacists but was not unmindful of the druggists' needs; he always could be counted on for support within the ranks of retail pharmacists, even though his interests were now largely wholesale and manufacturing.

Dean Charles H. LaWall gave an estimate of the contributions to pharmaceutical science by the medalist—in a sense this work was incidental to that which of necessity occupied the time of Mr. Beringer, but when the volume is considered it almost seems as if the reverse were true—he is an indefatigable worker, conscientious, exact and exacting. The speaker cited his work as Chairman of the Committee on Unofficial Standards as momentous and that on the United States Pharmacopœia and National Formulary as an example of his persistent and painstaking efforts and valuable contributions to pharmaceutical science. The speaker gave a like estimate of his labors at the College of Pharmacy.

Editor E. G. Eberle spoke of George M. Beringer as possessing essential qualities of a journalist—clearness, conciseness and exactness of expression; his knowledge of pharmacy and of the drug business in its various departments enabled him to write with authority; in all, he is ever loyal to pharmacy and a courageous contender for the rights of pharmacists. The speaker briefly referred to his success as editor of the *American Journal of Pharmacy*.

The text of Hon. Edwin G. C. Bleakly, former City Solicitor of Camden, was "See'st thou a man diligent in business he shall stand before kings; he shall not stand before mean men." He spoke of George M. Beringer as a citizen; summing up what constituted a good citizen, he pronounced him of that type. Evidently as a citizen Mr. Beringer is known by work he has accomplished, for the speaker closed his remarks with the quotation:

"The heights by great men reached and kept,
Were not attained by sudden flight,
But they, while their companions slept,
Were toiling upwards in the night."

Dr. Jacob Diner before presenting the medal commented on the remarks of previous speakers and that of President Arny in particular in happy repartee—that "whenever Beringer, Arny and Diner meet there is certainty of disagreement"—he contended that the disagreement was limited to Arny and Diner.

Dr. Diner expressed his pleasure in making the presentation to a retail pharmacist who had worked unceasingly and had produced results for pharmacy that have lasting value. "The medal is awarded as a token of work well done," he said, and expressed the hope that the medalist would be spared for many years to continue in his work for pharmacy.

The speech of acceptance by Mr. Beringer is printed elsewhere in this issue of the JOURNAL. The evening's program was, on motion, included in the minutes of the April meeting of New York Branch A. Ph. A. "A most delightful evening" was voiced by all present.

## UNIVERSITY OF NORTH CAROLINA.

The seventh meeting of the University of North Carolina Branch of the A. Ph. A. for 1923–24 was held on the evening of April fourth at Davie Hall. At this meeting the Branch voted its approval of the A. Ph. A. Headquarters Building Campaign and pledged $200 to the fund and also the amount which it will receive during the five-year period from the association as commissions for new members.

The following officers for the year 1924–25 were elected: J. A. Meacham, president; J. L. Thompson, first vice-president; Edward Haupt, second vice-president; J. M. Spoon, secretary and treasurer. E. V. Kyser was elected as the delegate to the House of Delegates.

After the business session Mr. W. R. McDonald delivered a very interesting lecture on "Men Prominent in Medicine and Pharmacy." The address was illustrated with slides loaned by

the H. K. Mulford Co., of Philadelphia.

Since the last meeting the following have affiliated with the Branch: J. F. Carrigan, J. A. Meacham, R. P. McNeely, J. M. Spoon, F. S. Goodrum, S. B. Hall, W. L. Johnson, P. H. Thompson, and M. B. Melvin.

At the next meeting, which will be held on April 30, Dean Wortley F. Rudd, of the Department of Pharmacy at the Medical College of Virginia, will address the Branch on "Pharmacy, Its Obligation and Future in the South."

C. R. WHITEHEAD, *Secretary.*

## PHILADELPHIA.

### MARCH MEETING.

The March meeting of the Philadelphia Branch of the American Pharmaceutical Association was held Tuesday evening, March 10th at the Philadelphia College of Pharmacy and Science, President White presiding.

There being no scientific program the regular business of the Branch was entered into. The nominating committee submitted the names of the following for officers of the ensuing year:

President, Jos. W. E. Harrisson.

First Vice-president, H. Martin Cameron.

Second Vice-president, Mortimer M. Smith.

Secretary-Treasurer, Adley B. Nichols.

Delegate to the House of Delegates, A.Ph.A., Ambrose Hunsberger.

The secretary was instructed to cast the ballot electing those nominated for the respective offices.

The special committee appointed at the last meeting to re-draft the By-Laws then made a report. The proposed By-Laws, as amended, were read by E. G. Eberle, section by section, discussed and approved and by vote adopted as a whole. They follow these minutes.

After the report of the committees had been received, Retiring President Robert C. White expressed his appreciation of the coöperation he had received during his term of office.

Dr. Samuel L. Hilton of Washington spoke on the proposed Pharmacy Headquarters Building. He urged the support of the Local Branch and the members.

Dr. Robert P. Fischelis and Dr. Leo. G. Penn were also present and spoke on the possibilities within the Branch.

The meeting adjourned, after the president had outlined the proposed meeting of the coming month, which it is hoped all of the ex-presidents of the Branch will attend.

JOS. W. E. HARRISSON, *Secretary.*

### PREAMBLE AND BY-LAWS OF THE PHILADELPHIA BRANCH OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

WHEREAS, The advancement of pharmaceutical knowledge and the elevation of the professional status of pharmacists are objects that are dear to us, in common with all well-disposed pharmacists; and,

WHEREAS, Some of those who are engaged in the practice of pharmacy do not exhibit the proper professional spirit, or a due appreciation of its duties and responsibilities;

THEREFORE, we the undersigned members of the American Pharmaceutical Association, do hereby resolve to constitute ourselves into a local branch, for the purpose of advancing the objects for which the body was founded.

The name of this body shall be "The Philadelphia Branch of the American Pharmaceutical Association."

This Branch hereby adopts for its guidance the Constitution and By-Laws of the American Pharmaceutical Association, and its individual members hereby subscribe to them.

### BY-LAWS.

1. Members—This Branch shall consist of active, associate and contributing members.

2. Active Members—All members of the American Pharmaceutical Association residing in or within a radius of seventy-five miles of the city of Philadelphia, may, on signifying their intention of adhering strictly to the provisions enumerated in the preamble and in the constitution of the American Pharmaceutical Association, be elected to active membership in this Branch.

3. Associate Members—All members of the American Pharmaceutical Association in good standing, residing in the county of Philadelphia, shall be accredited as being associate members of this Branch, but they shall not have the right to vote.

4. Contributing Members—Any person, who is not an active member, and who shall assist the Branch by the contribution of scientific papers, work or research, or add to its financial resources, shall be termed a contributing member, but without the right to vote.

5. Officers—The officers of the Branch shall be a president, two vice-presidents, secretary and treasurer and delegate to the House of Delegates.

6. Committees—At the March meeting of each fiscal year or as soon thereafter as possible the president shall appoint three Standing

Committees, as follows: A Committee on Practical Pharmacy, to consist of three members; a Committee on Professional Relations, to consist of three members, and a Committee on Membership, to consist of seven members.

7. Executive Committee—The officers of the Branch and the Chairmen of the Standing Committees shall constitute the Executive Committee, to transact all the necessary business connected with the regular meetings of the Branch.

8. Meetings—The meetings of the Branch shall be held on the second Tuesday of the month, from October to May, inclusive.

9. Quorum—Nine members of the Branch shall constitute a quorum.

10. Dues—Every active member of the Branch shall annually contribute the sum of one dollar.

11. Fiscal Year—The fiscal year of the Branch shall be from the stated meeting of March of one year to the similar meeting of the following year.

12. Elections—The officers shall be elected, by ballot, at the March meeting, and shall serve one year, or until their successors shall have been elected.

13. Presiding Officer—In the absence of the president or vice-presidents at any stated meeting the members present shall elect a presiding officer pro tempore.

14. Secretary—The secretary shall keep fair and correct minutes of the proceedings of the meetings and send reports of the same to the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION and such journals and newspapers as he may deem proper. He shall carefully preserve, on file, all reports and papers of every description presented to the Branch, and shall be charged with the necessary business and scientific correspondence. He shall read all papers handed him by the president for that purpose, shall call and record ayes and nays whenever they are required to be called; shall notify the chairman of every standing and special Committee of his appointment giving him a list of his colleagues and stating the business upon which the Committee is to act. He shall notify every member at least one week in advance of the time and place of each meeting.

15. Treasurer—The treasurer shall collect and take charge of the funds of the Branch and shall give receipts for the same. He shall pay no money except on the order of the secretary, countersigned by the president, and accompanied by the proper vouchers. He shall present a statement of his accounts at each March meeting of the Branch. He shall receive the amount of his expenses incident to the duties of his office.

16. Order of Business—(1) Reading of the minutes of the previous stated meeting; (2) introduction of newly elected members; (3) unfinished or deferred business; (4) new business; (5) scientific business; (6) nominations and elections; adjournment.

17. Miscellaneous—Every proposition to alter or amend these By-Laws shall be submitted in writing at a stated meeting of the Branch, and may be balloted for at any subsequent stated meeting, when, upon receiving the votes of three-fourths of the members present, it shall become a part of the By-Laws.

18. Rules of Order—On all points not specifically mentioned in the By-Laws governing this section, the By-Laws of the American Pharmaceutical Association shall take precedence over the other decisions on parliamentary rules.

### APRIL MEETING.

The April meeting of the Philadelphia Branch of the American Pharmaceutical Association was held Tuesday evening, April 8th, at the Engineers' Club, 1317 Spruce Street.

This, the first meeting of the new year, was very successful. As a special feature, a dinner was held at the Club previous to the meeting, to which all the ex-presidents were invited, as guests of an unnamed member. Nearly thirty of the Branch members were present for the dinner and it was an exceedingly interesting and enjoyable occasion. In fact, the opportunity to get together for a little social time was so thoroughly appreciated by those present that it was decided to hold a dinner previous to each monthly meeting hereafter.

The meeting itself was called to order by President Harrisson. After the reading and approval of the minutes of the March meeting the secretary reported fourteen applications for membership, twelve of which were applications to the parent body itself. The names are as follows: E. J. Hughes, C. W. Brodwater, R. L. Calvert, C. C. Pines, W. J. Stonebak, Robert Rowen, L. G. Freeman, E. A. Novak, M. J. Beck, N. Belov, A. H. Nowak and J. Bass, for the parent organization, and Robert J. Ruth and Arno Viehoever for the Branch itself. The secretary cast the ballot electing these men to membership.

The president announced the partial com-

pletion of the new membership committee of seven. Professors E. J. Hughes and Ivor Griffith were selected to particularly cover the Philadelphia College of Pharmacy and Science; Professors Leo Penn and Schachterle for the Temple University College of Pharmacy, and J. Roberts for the wholesale and manufacturing druggists. Another member will be selected to aid Mr. Roberts and the seventh will be named for the retail pharmacists.

The secretary read a communication from Mr. George M. Beringer, thanking the Branch for its kind letter of congratulation as recipient of the Remington Honor Medal.

A letter from Dr. R. P. Fischelis, Chairman of the Committee of Arrangements for the Beringer testimonial dinner, was also read. The Branch expressed itself as feeling highly honored in having this mark of distinction placed upon one of its members and everyone was urged to attend the dinner at Newark on April 14th.

Dean LaWall gave a very interesting synopsis of the work being done by the A. Ph. A. Building Fund Committee and explained the program which is to be carried out for the main drive.

As there was no new business to come before the society, the President introduced the speaker of the evening, Dr. C. W. Brown, of the H. K. Mulford Laboratories, Philadelphia, who spoke on Serums, Vaccines, Antitoxins and General Biologicals.

Dr. Brown's talk was extremely interesting, and as someone later remarked, his manner of making the subject popular as well as scientific was most pleasing. The audience was first carried back to the early discovery of bacteria themselves, when the early workers found that through their special glasses they could see living organisms which man could ordinarily not see. Gradually the story wound its way through the history of vaccines, from the earliest notice of the connection of cowpox with smallpox and from the crude preparation then prepared, to the vaccine now so scientifically regulated and marketed.

The next step of Dr. Brown's talk, Antitoxins, was illustrated by motion pictures which were very entertaining. Here again his listeners were carried along, from the proper selection of the horse on down through the various operations, finally leading out through the shipping room with the finished package, ready to do its duty for humanity.

Dr. Brown also mentioned and described additional units of the bacteriological household such as serums, antibody solutions, dry vaccines, and others. At the close of this most interesting and helpful talk a rising vote of thanks was given to the speaker.

The president next called upon the various ex-presidents and others of the Branch for a few remarks. The responses which were received were quite as entertaining as the original program had been and the following were among those to speak: W. L. Cliffe, W. W. McNeary, W. A. Pearson, J. W. Sturmer, B. C. Goodhart, E. G. Eberle, Ivor Griffith, Ambrose Hunsberger, C. H. LaWall and R. C. White.

ADLEY B. NICHOLS, *Secretary.*

## UNIVERSITY OF WASHINGTON.

The monthly meeting of the University of Washington Branch of the American Pharmaceutical Association was held at Bagley Hall March 26. Thirty-five members were present. President Shaw spoke a few minutes upon the desirability of having all students as members of the branch. He also suggested that the members become active in interesting high school seniors in the profession of pharmacy. He then introduced Mr. A. W. Ayer, State Food and Drug Inspector, who reviewed the laws affecting the pharmacists of the state. The first phase of the talk consisted of the application of the Harrison Narcotic Law to retail pharmacists and the relation of the Washington State narcotic law to the Federal Law. Many specific cases of application were given as illustrations. The second phase consisted of the application of the State Food and Drug Law to the practice of retail pharmacy. This was followed by the prohibition law and finally the State Pharmacy Law. After the general talk had been presented many questions were asked of Mr. Ayer, and the talk became a general discussion.

H. A. LANGENHAN, *Secretary.*

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*Why I Enjoy the Round Table.* A symposium by the Chicago Veteran Druggists' Association. The motto of this association is "Cheers for the Living, and Tears for the Dead." This is exemplified in the expressions made by thirty or more members of the veteran organization. Many of these are most interesting and the splendid success in bringing together each week congenial spirits has been well worth while. Wilhelm Bodemann has 99 reasons for the association and his membership therein; "only 3 are needed," he said.

# COMMITTEE REPORTS

## REPORT OF COMMITTEE ON COÖPERATION OF AMERICAN PHARMACEUTICAL ASSOCIATION WITH NATIONAL RESEARCH COUNCIL.*

Mr. President and Fellow Members of the A. Ph. A.:

The Committee on Coöperation of the American Pharmaceutical Association with the Division of Biology and Agriculture of the National Research Council, appointed late in 1922 by the Council of the A. Ph. A. with the aims of coöperating with the National Research Council in stimulating and coördinating research in the fields of Pharmacognosy and Pharmaceutical Botany and securing ultimately representation for these branches of American Pharmacy on the National Research Council, respectfully submits the following report:

At the meeting of the Executive Committee of the Division of Biology and Agriculture of the National Research Council held in Washington, Dec. 16, 1922, the personnel of the Committee on Coöperation was approved, as submitted by Chairman Hilton of the A. Ph. A. Council.

Prior to this meeting the Chairman of the Committee on Coöperation wrote to Doctor Lillie, then Chairman of the Division of Biology and Agriculture, requesting that the Committee on Coöperation be constituted a sub-committee on Pharmaceutical Botany and Pharmacognosy of the Division of Biology and Agriculture of the National Research Council.

On January 3, 1923, he received the following letter:

Dr. Heber W. Youngken, January 3, 1923.
Philadelphia, Pa.

Dear Dr. Youngken:

> At the meeting of the Executive Committee of the Division of Biology and Agriculture on December 16th the personnel of the Committee on Coöperation from the American Pharmaceutical Association was approved as submitted. Action on your request to constitute this a sub-committee on pharmaceutcial botany and pharmacognosy was delayed pending further information. It has not been the custom in the Division to constitute committees of the Division from the committees on coöperation of the societies concerned for the reason that the purposes and functions of the two groups are necessarily different in certain respects. The Executive Committee felt, therefore, first, that the recommendation for the appointment of a committee on pharmaceutical botany and pharmacognosy should be supported with argument inasmuch as the Division is now moving toward reduction of committees rather than increase of their number; and in the second place if such committee were approved the question of personnel should be studied as a separate matter from that of the committee on coöperation of the Pharmaceutical Association. I think it may be found that the committee on coöperation will be sufficient to establish all useful contacts for the time being.
>
> (Signed) FRANK R. LILLIE, *Chairman.*

It was early felt by the members of the Committee on Coöperation that while recognition had been received from the National Research Council for Pharmacognosy and Botany, it was nevertheless apparent that the status of our Committee was such that it could only *suggest* rather than *direct* problems desiring attention, that to undertake the work of coördinating and initiating research in its field would require both the moral and financial backing of the National Research Council, and, further, that by being an integral body of it its potentialities would be greater and pharmaceutic interests best served. After first obtaining the opinions of the members of the committee relative to their reasons for the change in status, your chairman, on the 20th of March, submitted a collective argument to the Executive Committee of the Division of Biology and Agriculture of the National Research Council indicating the reasons the Committee on Coöperation had for desiring the status of a sub-committee or committee of the Division rather than that of a Committee on Coöperation.

As a result of this argument, the Executive Committee of the Division of Biology and Agriculture, at its meeting in Washington on April 22nd, voted affirmatively to change the status

* Presented and accepted at Asheville meeting, A. Ph. A., 1923.

of the Committee on Coöperation to that of the Committee on Pharmacognosy and Pharmaceutical Botany of the Division of Biology and Agriculture of the National Research Council. It also appointed the personnel of the A. Ph. A. Committee on Coöperation to serve until June 30, 1924.

Additional recognition and representation has thus been attained for American Pharmacy in the National Research Council.

(Signed) E. N. GATHERCOAL,
E. L. NEWCOMB,
ARNO VIEHOEVER,
H. H. RUSBY,
HEBER W. YOUNGKEN, *Chairman.*

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SOCIAL EVENING OF THE CONFERENCE OF THE PALESTINE PHARMACEUTICAL ASSOCIATION UNDER THE AUSPICES OF THE CENTRAL BRANCH, JERUSALEM.

1, F. Haddad (President); 2, E. Oplatka (Vice-President); 3, J. Michlin (Secretary); 4, M. Hausdorff (Treasurer); 5, Miss F. Fabritz; 6, A. Koswiner; 7, S. Tannous (Committee members); 8, Reitblatt (Jaffa delegate); 9, Aurbach (Tel-aviv delegate); 10, R. Nassar (Haifa delegate); 11, S. Carnapas; 12, P. Gaitanopoulos (of the Council); 13, Dr. Oplatka (Health Department); 14, Dr. Ticho; 15, Dr. Beham (Jewish Med. Assoc.); 16, Dr. Kalbian; 17, Dr. Tannous (Academy of Medicine); 18, Dr. M. Malouf (Dist. Health Office); 19, Dr. Neuman (Bicur Holim Hosp.); 20, M. Michlin (Misg. Lad. Hosp.): 21, Dr. Litwak; 22, Dr. Marie Meises.—Allenby Hotel, Jerusalem.

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## LETTERS FROM OUR HONORARY MEMBERS.

**Dr. L. Van Itallie** of Leyden under date of March 27 expresses his appreciation of the honor conferred by electing him an honorary member of the American Pharmaceutical Association. He states that he has for many years read the JOURNAL of the Association with a great deal of interest and considers it a favor to be more closely associated with the work of the American Pharmaceutical Association.

**Professor Emil Perrot** of Paris, France, thanks the Association for his election as honorary member and also sends several monographs dealing with research work in his laboratory. He appreciates highly the distinction of membership in the Association.

**Dr. J. G. Gadamer** of Marburg in a letter to Secretary Day acknowledges the compliment conferred by electing him an honorary member of the American Pharmaceutical Association. A second edition of Dr. Gadamer's work, "Chemical Toxicology," is just off the press.

**Dr. H. Thoms** formally acknowledges with thanks his election to honorary membership, which he states has given him great joy, and asks to be remembered to the membership of the American Pharmaceutical Association. Dr. Thoms has recently returned to his home after nearly a year's absence. He visited in the United States on his journey to the Far East.

# ASSOCIATION BUSINESS

## AD INTERIM BUSINESS OF THE BOARD OF DIRECTORS.

Office of the Secretary, 192 Roseville Ave., Newark, N. J.

LETTER NO. 16.

April 7, 1924.

*To the Members of the Board of Directors:*

*80. Hancock Resolutions:* Motion No. 20 (see item 76, p. 374, Letter No. 14) has been carried.

*81. Appropriation for Headquarters Campaign:* Motion No. 21 (see item 77, p. 374, Letter No. 14) has been carried.

*82. Location of Headquarters Building:* The following communications have come in from Board members.

Mr. Hilton writes as follows:

"Washington, D. C., March 24, 1924.

"I possibly did not make myself entirely clear in making my motion in regard to the Headquarters building. What I had in view was to have the Board consider the proposition, not to decide it definitely, as I do not believe with the previous understanding the Board is in the position to decide, unless, the conditions were such that the drive about to be conducted will fall down and I know this is not the case. While there has been a number of requests that the building be located in Washington, Dr. Dunning is now of the opinion, I believe, from what he said at our last meeting Wednesday that it would not make any difference, possibly it would be well to write him if he has not already written you.

"The idea as presented by Mr. Beringer is a good one and I am rather inclined to favor it. I do, however, think the Board should consider the matter carefully and present concrete plan at the Buffalo meeting.

Very truly yours,

S. L. HILTON."

Dr. Whelpley writes as follows:

"St. Louis, March 25, 1924.

"I am not at all surprised that the question of location of the A. PH. A. headquarters building proves one of interest. However, I am unable to believe that it will materially further the collection of subscriptions to the fund if the question is settled at once. There was no discussion against the motion, as far as I recall when, at the Asheville meeting, the matter was left to a vote of the membership at large. I fear that the directors would be open to the charge of being fickle-minded or unduly prejudiced in case the decision was reversed at this moment. The idea of taking such action by a correspondence vote appeals to me as particularly unwise.

"We are appealing for subscriptions from pharmacy in general without distinction between the various branches of the calling or regard for geographical location of those contributing. Let us be democratic in the manner of selecting a location. Leave the decision to the judgment of the entire membership.

Very truly,

HENRY M. WHELPLEY."

Dean LaWall writes as follows:

"Philadelphia, March 27, 1924.

"With reference to Motion 22 by Hilton regarding the location of the Headquarters Building, I feel that it is out of order, no matter how expedient it may seem at present, for the Board is in honor bound to respect the understanding that the members have that there shall be a general vote of the membership taken on the subject. The matter should really have been taken up before so that a general mail vote could have been specially ordered, but it is now too late for this to do any good in time for the campaign.

"I think that Professor Scoville's point regarding thrift and the necessity of endowment is well taken. We should have an amount for permanent endowment equal to that expended upon the building itself.

"If it will clear the atmosphere for the present I will move that of the money collected for the A. PH. A. Headquarters, not more than 50% be spent for the land and building and that 50% be invested as a permanent endowment for the upkeep of the building and the necessary expenses connected therewith.

"I think that Mr. Beringer's suggestion for an expression of opinion from the membership of the Board is very good and I

will state that so far as I am concerned I think Washington is the only place to be given serious consideration.

Very truly yours,

CHARLES H. LAWALL."

(*Motion No. 24.*) It is moved by LaWall, that of the money collected for the A. PH. A. Headquarters, not more than 50% be spent for the land and building and that 50% be invested as a permanent endowment for the upkeep of the building and the necessary expenses connected therewith.

It is apparent from the foregoing correspondence and that of Letter No. 15, that the sentiment of the Board of Directors is in favor of withholding a decision on the location of the headquarters building by the Board. In order to get a definite record on the matter a vote on Motions 22 and 23 (see item 89, Letter No. 15) is called for at this time.

*83. Appointment of delegate to A. D. M. A.* President Arny has appointed Mr. Robert R. Lampa of New York to represent the A. PH. A. at the annual meeting of the American Drug Manufacturers' Association in New York, week of April 7.

*84. Appointment of Committee to draw up resolutions on death of ex-President E. L. Patch.* Chairman Beal has appointed the following committee to draw up suitable resolutions expressing the regret of the A. PH. A. at the passing of former President Edgar L. Patch of Boston: H. V. Arny, Chairman, George M. Beringer and Robert P. Fischelis.

*85. Tentative Program for Annual Meeting at Buffalo:* Secretary Day submits the following tentative program for the seventy-second annual meeting of the A. PH. A. to be held at Buffalo, August 25 to 30, 1924. Secretary Day writes that the tentative program has the approval of the officers of the A. C. P. F. and N. A. B. P. and of Local Secretary Gregory. Suggestions for correction or amendment are now in order. A vote on the program will be called for later.

## ANNUAL MEETING OF THE A. PH. A., BUFFALO, NEW YORK, AUGUST 25 TO 30, 1924.

HEADQUARTERS AT THE HOTEL STATLER.

MONDAY, AUGUST 25.

9:00 A.M. Meeting of the Board of Directors, A. PH. A.
9:00 A.M. National Association of Boards of Pharmacy.
2:00 P.M. National Association of Boards of Pharmacy.
2:00 P.M. American Conference of Pharmaceutical Faculties.
8:00 P.M. National Association of Boards of Pharmacy.
8:00 P.M. American Conference of Pharmaceutical Faculties.

TUESDAY, AUGUST 26.

9:00 A.M. Joint Session N. A. B. P. and A. C. P. F.
2:00 P.M. National Association of Boards of Pharmacy.
2:00 P.M. American Conference of Pharmaceutical Faculties.
2:30 P.M. Special entertainment for the ladies.
7:00 P.M. First Session House of Delegates.
8:00 P.M. First General Session, A. PH. A.

WEDNESDAY, AUGUST 27.

9:00 A.M. First Session, Section on Historical Pharmacy.
9:00 A.M. First Session, Section on Commercial Interests.
9:00 A.M. First Session, Scientific Section.
2:00 P.M. Second Session, House of Delegates.
7:00 P.M. Meeting of the Board of Directors.
9:00 P.M. President's Reception and Ball.

THURSDAY, AUGUST 28.

9:00 A.M. First Session, Section on Practical Pharmacy and Dispensing.
9:00 A.M. First Session, Section on Education and Legislation.
9:00 A.M. Second Session, Scientific Section.
9:00 A.M. First Session, Women's Section.
2:00 P.M. Second General Session of the A. PH. A.
2:00 P.M. Automobile ride to East Aurora and visit to the Roycroft shops and tea for the ladies only.
4:00 P.M. Third Session of the House of Delegates.
7:00 P.M. Meeting of the Board of Directors.
8:30 P.M. Illustrated Lecture.

FRIDAY, AUGUST 29.

9:00 A.M. Second Session, Section of Historical Pharmacy.
9:00 A.M. Second Session, Section on Commercial Interests.
9:00 A.M. Third Session, Scientific Section.
1:30 P.M. Second Session, Section on Education and Legislation.
1:30 P.M. Second Session, Section on Practical Pharmacy and Dispensing.

2:00 P.M. Matinee for ladies only.
3:00 P.M. Final Session, House of Delegates.
7:30 P.M. Final General Session.
9:30 P.M. Meeting of the Board of Directors.

SATURDAY, AUGUST 30.

All day trip to Niagara Falls and the Lower Gorge.

*86. Applicants for membership:* The following applications for active membership accompanied by the first year's dues and proper endorsements have been received. You are requested to vote on these applications: No. 353, Theodore James Besta, 2354 S. St. Louis Ave., Chicago, Ill.; No. 354, Horace F. Ivey, Gillham, Arkansas; No. 355, William Lewis Johnson, Chapel Hill, N. C.; No. 356, William Clifford King, 419 N. Spaulding Ave., Chicago, Ill.; No. 357, Simon Mendelsohn, 2300 W. 8th St., Cincinnati, Ohio; No. 358, Henry Karr Shannon, 209½ W. 2nd St., Little Rock, Ark.; No. 359, Henry Herman Wolff, 178 Howard Street, Lowell, Mass.; No. 360, E. L. Summer, 1415 23rd Ave., Meridian, Miss.; No. 361, David Gersten, 212 Ridgewood Ave., Newark, N. J.; No. 362, Harry Mill Lancaster, 317 Queen St., Ottawa, Canada; No. 363, Ralph S. Westgate, 23 Vine St., Brooklyn, N. Y.; No. 364, Harold H. Pierce, 206 Pasadena Ave., Detroit, Mich.; No. 365, Marion Butler Melvin, P. O. Box 642, Chapel Hill, N. C.; No. 366, Alexander T. Gross, 5011½ Main St., Newton, Kansas; No. 367, Eva S. Carr, Church General Hospital, American Church Mission, Wuchang, China; No. 368, Richard D. Huskins, DeQueen, Ark.; No. 369, Lewis S. Greenberg, N. E. 8th & Noble Sts., Philadelphia, Pa.; No. 370, George Winfield McLennan, 40 Jensen Apts., Salt Lake City, Utah; No. 371, S. B. Friedman, N. E. 17th & Diamond St., Philadelphia, Pa.

(*Motion No. 25.*) *Vote on applications for active membership in the American Pharmaceutical Association.*

ROBERT P. FISCHELIS, *Secretary,*
Board of Directors, A. Ph. A.

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## DRUG TRADE CONSIDERS SIMPLIFICATION.

The drug trade of the United States is showing keen interest in methods of cutting operating costs and increasing revenues by faster turnovers of their stocks. Indications of this were apparent in reports made before the American Drug Manufacturers' Association of committees on the simplification of catalogs and the standardization of glass containers and by subsequent action of officers of the National Association of Retail Druggists.

Reports made to the American Drug Manufacturers' Association at its meeting in New York were prepared with the aid of the Department of Commerce through the Chemical and Drug Division and the Division of Simplified Practice. They emphasized the value of eliminating excess and slow-moving varieties.

Following the New York meeting, J. H. Webster, of Detroit, Mich., president of the National Association of Retail Druggists, E. C. Brokmeyer, general attorney, and a delegation from the organization, were in conference with the Division of Simplified Practice and the Chemical and Drug Division of the Department of Commerce as to methods of applying the elimination of waste in their field.

The selection of a conference committee to make a study of conditions with a view to further action by the retail drug trade as a whole was urged. With such action in prospect, the surveys would form a basis for eliminations of needless varieties and items by a conference representing the manufacturers, distributors, retailers and consumers, the latter including the American Medical Association and the hospital associations.

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*Proceedings of the American Conference of Pharmaceutical Faculties.* Report of the meeting of 1923 held at Asheville, N. C. Among the addresses and papers of the convention are those of President Charles H. LaWall and Dr. H. W. Chase of the University of North Carolina; papers on "Chemical Education in Pharmacy Schools" by John C. Krantz, Jr.," "Laboratory Management" by Leon M. Monell, and "Imperative Need of Higher Educational Standards" by Frederick J. Wulling. Interesting reports include those on the "Relation of Pharmacy Schools to Other Professional Institutions," on "Prerequisite Legislation," "Higher Educational Standards" and "Schedule for Grading Schools of Pharmacy," "Research" and the "Report of the Committee on Curriculum and Teaching Methods." This book has more than 169 pages and the proceedings have been well arranged by Secretary-Treasurer Zada M. Cooper.

# EDITORIAL NOTES

Editor: E. G. EBERLE, Bourse Building, Philadelphia, Pa.

Board of Directors, A. PH. A.: JAMES H. BEAL, *Chairman;* S. L. HILTON, *Vice-Chairman;* ROBERT P. FISCHELIS, *Secretary;* CHARLES H. LAWALL, HENRY M. WHELPLEY, JOHN G. GODDING, GEORGE M. BERINGER, CHARLES E. CASPARI, W. L. SCOVILLE. *Ex-Officio:* H. V. ARNY, President; WILLIAM B. DAY, Secretary; E. F. KELLY, Treasurer. Committee on Publications: R. P. Fischelis, *Chairman;* H. V. Arny; Geo. M. Beringer; E. F. Kelly; Wm. B. Day; A. G. DuMez, E. G. Eberle.

Collaborators: The members of the Board of Directors; the Editor of the YEAR BOOK, A. G. DUMEZ, Hygienic Laboratory, Washington, D. C.; E. FULLERTON COOK, Chairman, U. S. P. Revision Committee; W. L. SCOVILLE, Chairman, N. F. Revision Committee; the Vice-Presidents-elect, A. Ph. A.: LYMAN F. KEBLER, F. E. BIBBINS, W. BRUCE PHILIP; the Chairmen of the Sections, A. Ph. A.: J. P. SNYDER, G. A. BERGY, ROBERT J. RUTH, HENRY B. SMITH, CLYDE L. EDDY; L. L. WALTON, Chairman of the House of Delegates, A. Ph. A., CHARLES W. JOHNSON, President A. C. P. F.; CHARLES B. JORDAN, Chairman Executive Committee, A. C. P. F.; F. E. MORTENSON, President, N. A. B. P.; HENRY C. CHRISTENSEN, Secretary, N. A. B. P.

## HOME OF NATIONAL ACADEMY OF SCIENCE DEDICATED.

Setting anew the government's stamp of approval on the work of the National Academy of Sciences and the National Research Council, President Coolidge, speaking at the dedication of the new home in Washington, April 28, of the two organizations, predicted the coming of "a new day in scientific research." He said—"The scientific man is rending the earth to reveal its secrets. Truth must prevail for the betterment of mankind, and with the energy that the men of science are putting into the problems of research, Diogenes would certainly have a chance to lay down his quarter staff and lantern and rest if he would turn his search in their direction."

## PROGRESS IN THE A. PH. A. HEADQUARTERS BUILDING FUND DRIVE.

The progress made in collecting funds for the A. Ph. A. Headquarters Building fund is highly gratifying—that so early in the campaign about $250,000 or more has been subscribed is not unexpected by those whose enthusiasm has been supported by energy and a belief that pharmacists would respond to a proposition in which they will have a part and pride. There is still much work to do. So many quotations are applicable in one way or another and carry messages of encouragement, which may serve a better purpose than other words that might be shaped for comment: "If it were done when 'tis done, then 'twere well it were done quickly." "The flighty purpose never is o'ertook, unless the deed go with it." Lord Chesterfield said "Despatch is the soul of business," and Lavater —"Who makes quick use of the moment is a genius of prudence." George Eliot wrote—"Our deeds determine us as much as we determine our deeds;" Emerson advised—"Go put your creed into your deed." Giusti said —"A deed done has a beginning;" and finally lines from Schiller are applicable; in fact, if you have followed the citations you will have noted there is a sequence and leads to this one—"Your deeds are known, In words that kindle glory from the stone"—The Headquarters Building.

More than $250,000 has been pledged; subscriptions have come in from manufacturers and wholesalers in amounts ranging from $500 to $25,000 each. Retail pharmacists are giving from $25 up to $1000 each. Pharmacy schools have given liberally in sums ranging from several hundred dollars to more than that many thousand dollars. Fraternal organizations have responded and A. Ph. A. Branches are represented by amounts that indicate the spirit of giving and an appreciation of what the success of the movement will mean for American Pharmacy. This in a general way shows the interest which is also exhibited by State Associations—each one of these organizations has responded liberally, not one has failed—the reports of the conventions whenever the annual meetings are held carry messages of coöperation. June is the big month and will add largely to the fund. Those who present the subject before state meetings may find texts in this comment, they surely will enthuse over the messages, from the Directors H. A. B. Dunning and E. L. Newcomb.

## List of Subscriptions to Headquarters Funds by States.

TABULATED UP TO MAY 1, SINCE THEN THE AMOUNT HAS BEEN MORE THAN DOUBLED.

THE CAMPAIGN HAS STARTED WELL,—DO YOUR PART!

| State. | Drug firms operating retail stores in state named in first column.* | Total amount subscribed, *i.e.*, for which returns have been made. |
|---|---|---|
| Arizona | 125 | $200.00 |
| Arkansas | 929 | 125.00 |
| California | 1,823 | 405.00 |
| Colorado | 596 | 180.00 |
| Connecticut | 604 | 55.00 |
| District of Columbia | 195 | 450.00 |
| Florida | 684 | 25.00 |
| Idaho | 238 | 100.00 |
| Illinois | 2,943 | 10,333.00 |
| Indiana | 1,590 | 7,745.00 |
| Iowa | 1,483 | 9,820.00 |
| Kentucky | 849 | 530.00 |
| Kansas | 1,143 | 50.00 |
| Louisiana | 750 | 260.00 |
| Maryland | 561 | 26,336.00 |
| Massachusetts | 1,690 | 4,599.40 |
| Michigan | 1,784 | 747.00 |
| Minnesota | 1,024 | 8,960.00 |
| Mississippi | 692 | 85.00 |
| Missouri | 2,230 | 2,090.00 |
| Montana | 305 | 105.00 |
| Nebraska | 916 | 195.00 |
| New Hampshire | 232 | 115.00 |
| New Jersey | 1,437 | 12,750.00 |
| New Mexico | 130 | 25.00 |
| New York | 4,573 | 44,250.00 |
| North Carolina | 865 | 667.50 |
| North Dakota | 347 | 200.00 |
| Ohio | 2,196 | 972.00 |
| Oregon | 440 | 25.00 |
| Pennsylvania | 3,632 | 4,320.00 |
| Rhode Island | 301 | 5.00 |
| South Carolina | 562 | 685.00 |
| South Dakota | 391 | 125.00 |
| Tennessee | 799 | 5.00 |
| Texas | 3,031 | 153.50 |
| Utah | 185 | 50.00 |
| Virginia | 764 | 350.00 |
| Vermont | 155 | 10.00 |
| W. Virginia | 450 | 185.00 |
| Wisconsin | 1,077 | 310.00 |
| National | ... | 525.60 |
| Porto Rico | ... | 2.00 |
| | | $139,136.00 |

* *Druggists' Circular*, May 1924.

## BULLETINS OF THE DRUG TRADE BUREAU OF PUBLIC INFORMATION.

Director Robert P. Fischelis has recently issued Bulletins B-12 to B-16.—Bulletin B-12 refers to that issued to the members of the National Wholesale Druggists' Association in which coöperation of the drug trade with the business research of Harvard University is asked. Interest in this cost research work is evidenced by the fact that a higher percentage of cost returns were made by the National Wholesale Druggists' Association than by any other group with which the Bureau had been conducting this kind of study.

Bulletin B-13 deals with the combined curriculum of the University of Michigan. This report is given in the April issue of the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, pp. 353–356.

Bulletin B-14 was circulated through the Associated Press and the United Press Association. It has reference to the campaign for a Headquarters Building by the American Pharmaceutical Association. This campaign has been given splendid support by all divisions of the drug trade and the publicity by the pharmaceutical press has been most gratifying. Excerpts from comments by retail pharmacists and members of pharmaceutical faculties will be found in the April number, JOURNAL A. PH. A., pp. 285–306, and elsewhere in this issue. Concentrated and prompt efforts should be made to bring the campaign to conclusion at an early day. This should be possible as there is no dissenting voice relative to this greatest event in American Pharmacy.

Bulletin B-15 relates to the formal award of the Remington Honor Medal to George M. Beringer of Camden, N. J. The presentation ceremonies took place at a dinner given in his honor at the Robert Treat Hotel on April 14. The address of the medalist appears in this issue of the JOURNAL, also, under Local Branches, a brief report of this very interesting affair.

Bulletin B-16 deals with the Price Maintenance measures now pending in Congress as discussed by Charles Wesley Dunn of the New York Bar and made public by the Drug Trade Bureau of Public Information. The Bulletin gives quite a number of pointed statements by Mr. Dunn, emphasizing the harmfulness of unfair competition. Speaking of price cutters, he says: "The attack is always against the fairest articles of merchandise on the

market whose good name they misappropriate and whose just popularity they exploit for their own selfish use and to the detriment of all of those concerned." The effect on the manufacturer is shown in the following: "Thus by the wanton act of another their capital or merchandise is impaired by the deliberate depreciation of its market value and they are compelled to do business upon an unprofitable basis or at a loss." The desire of the public is expressed in the following: "What the public wants is wholesome and constructive competition which tends to and does elevate trade as a whole to the highest plane of efficiency. Prosperity and public service is competition which produces a fair and reasonable price to the consumer and dealer alike." "This is the competition the public wants and profits by."

### A UNIVERSAL LANGUAGE.

At a meeting of the American Philosophical Society in Philadelphia recently the need for a universal language was discussed and the fact was pointed out that in all activities the need of such means of communication was apparent. The International Pharmaceutical Federation at its meeting last year included Esperanto terms in the nomenclature. This, to a certain extent, may help in developing a universal language; in the writer's opinion the adaptation of Latin is possible and preferable.

## PERSONAL AND NEWS ITEMS.

**Dr. Frederick B. Power,** A. Ph. A. member since 1872, was elected to membership in the National Academy of Sciences, at the recent meeting held in Baltimore. The honor is prized highly and the preferment well deserved.

**Dean and Mrs. L. E. Sayre** celebrated the golden anniversary of their wedding April 23. Members of the university, citizens and friends generally joined in congratulations and wishes for the happy couple. A card reads: "It is indeed an inspiration to feel that two very quiet people had gathered around them such a circle of friends."

The bride and groom send thanks to all for the many tokens of affection. Professor Sayre joined the A. Ph. A. in 1883 and is an ex-president of the Association. Mrs. Sayre is gaining in strength; until her recent illness, she usually accompanied the dean to annual conventions.

**Hugo H. Schaefer,** Secretary New York Branch A. Ph. A., and member of the faculty of New York College of Pharmacy, has returned to Berne, Switzerland, to continue his studies under Prof. Dr. A. Tschirch.

**Dr. Carl L. Alsberg,** director of Food Research Institute of Stanford University, who was for a number of years head of the Bureau of Chemistry, visions artificial carbohydrates, fats and amino acids as foods but thinks humanity will always be dependent on agriculture for its vitamins. In a paper before the American Chemical Society Dr. Alsberg pointed out that man is not absolutely dependent on the soil for the production of foodstuffs.

**W. F. Baum,** Danville, Ill., has been enjoying the climate of San Antonio, Tex., for several months.

**H. C. Fuller** of the Institute of Industrial Research, Washington, is in Europe. He will attend the 4th Congress of Industrial Chemistry at Bordeaux during the week of June 15th, as a delegate of the AMERICAN PHARMACEUTICAL ASSOCIATION and the American Chemical Society. He will also be present at the International Union of Pure and Applied Chemistry at Copenhagen during the week of June 26th, as a representative of the National Research Council.

**Secretary Frank Schachleiter,** of the Arkansas Board of Pharmacy, has sent us several copies of Sunday editions of the *Arkansas Democrat* which carry full page advertisements of Little Rock pharmacists; the locations of the stores are given and the statement is made that the space is paid for in the interest of promoting public health and safety and better service. The greater part of the page acquaints the readers with the mission and service of pharmacy. The issue of April 13 carries another full page message and this is entirely given over to the A. Ph. A. Headquarters Building and a message to pharmacists and other readers bearing testimony to what the A. Ph. A. has accomplished during its 72 years of service.

**George Washington Edmonds,** of Philadelphia, for quite a number of years Representative in Congress, was defeated as Republican nominee. Mr. Edmonds will be remembered for his efforts in behalf of a Pharmacy Corps in the U. S. Army during the war. He is a graduate of the Philadelphia College of Pharmacy.

**Prof. William J. Husa** of the University of Florida School of Pharmacy will spend May, June and July at the University of Iowa. After that, he will return to Florida.

**Dr. Townes R. Leigh,** director of the Florida School of Pharmacy, represented the University

of Florida at the recent conference of the Committee of One Thousand at Washington.

**Mlle. Eva Curie,** daughter of Mme. Curie, is visiting in the United States. She is a noted pianist and will tour the country in concert.

**Dr. Charles Valliant,** who lost both hands in experiments with the X-Ray, was recently tendered a reception in Paris at which time a bound volume of addresses bearing on his work was presented to him.

**Louis J. Lehman,** pharmacist at Washington and Jefferson Avenues, St. Louis, celebrated the 30th anniversary of his business, March 22nd. Prior to the event the store was completely overhauled and rearranged. He is an alumnus of both the St. Louis and Philadelphia Colleges of Pharmacy. A physicians' supply department was added to the store a number of years ago and the prescription department is a most important part of the business. Mr. Lehman is also proprietor of the Polyclinic and O'Fallon dispensaries.

**Harry W. Ayers** is the recently appointed field secretary of the Washington State Pharmaceutical Association. He was graduated from the University of Washington with the degrees of B.S. and Ph.C. He was for a time connected with the Owl Drug Company; during the war he was in the Aviation Corps; in 1921, Mr. Ayers was named State Food and Drug Inspector of the State of Washington.

**Charles H. Huhn** was the birthday celebrant at the March 21 meeting of the Minneapolis Veteran Druggists' Association.

**Dean Frederick J. Wulling** is a member of the Scientific Exhibit Committee of the Hennepin County Medical Society which is sponsoring a health exhibition in Minneapolis this month. The Dean was in Washington, D. C., during the first week of May in attendance at the annual meeting of the Board of Trustees of the U. S. Pharmacopœial Convention.

**Publicity Director E. L. Newcomb** has converted his Pharmacognosy Laboratory into a publicity bureau where eight assistants are engaged a good part of the time in preparing news items for the press and sending out campaign literature. Professor Newcomb had charge of the pharmacy exhibit of the Health Exposition held at the Armory in Minneapolis May 3–10.

**Carl F. G. Meyer** has received a commission as Civilian Aide to the Secretary of War. A representative citizen and business man in each state is selected to form a connecting link between the civilian citizenry of the states and the War Department, in the plan of national industrial mobilization.

**A. L. I. Winne,** secretary of the Virginia Pharmaceutical Association, reports that druggists of the state displayed a greater degree of coöperation this year than ever before, which made possible successful legislative work.

**George M. McIntosh** has succeeded F. H. Jones as president of the American Druggists' Syndicate.

**B. E. Pritchard,** of Pittsburgh, has been reelected secretary of the Western Pennsylvania Druggists' Association. He has served in this capacity practically since the organization of this body.

**Miss Clara Hulskamp,** secretary and treasurer of the Hulskamp Drug Co., Louisville, graces the cover of the *Kentucky Druggist* of a recent issue. Miss Hulskamp is a graduate of the Louisville College of Pharmacy and has been active in W. O. N. A. R. D. work.

**Prof. Heber W. Youngken** came from Boston to Philadelphia on April 17 to deliver a lecture at the Philadelphia College of Pharmacy and Science on "The Drugs of the North American Indian." The uses of quite a number of drugs were described and a large number of samples of drugs used by the Indians was displayed. A large attendance greeted Dr. Youngken and his illustrated lecture was well received.

The Paris correspondent of *Chemist & Druggist* states that the Examination Hall of the Strasburg Faculty of Pharmacy has been ornamented by a portrait of Pasteur who was for some time professor there. Members of the Pharmaceutical Association of Alsace-Lorraine have contributed two bronze medallions, one of Gerhardt, the chemist, and the other of Kirschleger, the botanist.

Dr. Walter H. Eddy of Columbia University has announced his success in isolating vitamin D. He was assisted in this work by Drs. Ralph W. Kerr and R. R. Williams.

The frontispiece of the *Carolina Journal of Pharmacy* for April presents a picture of **Franklin Willis Hancock** of Oxford. A sketch of the well-known pharmacist accompanies the frontispiece. Mr. Hancock has been a member of the North Carolina Board of Pharmacy for 27 years.

Francis P. Garvan was honored by a testimonial dinner at the Waldorf Astoria Hotel last month, attended by seven hundred men and women identified with the American chemical and allied interests. Dr. Edgar Fahs Smith presided as toastmaster and among the

speakers of the evening was President Leo H. Baekeland, of the American Chemical Society.

The Boston Medical History Club held its annual meeting April 21 at which time Sir D'Arcy Power of London was one of the principal speakers. Dr. John Donley read a paper on Experimental Neurology of Galen, and Dr. Henry Viets had as his subject Fifteenth Century Medical Libraries.

### BRITISH EMPIRE EXHIBITION.

The British Empire Exhibition will be open until the close of October 1924. During that period there will be other industrial events of interest to visitors. The British Industries Fair will close May 23rd. On the 23rd of June the Chemists' Exhibition will be opened in the Central Hall, Westminster, London. The exhibition will consist of a comprehensive display of drugs, medicinal preparations and sundries of various kinds manufactured in Great Britain.

### ZINC STEARATE DUSTING POWDER.

The American Medical Association at its meeting in San Francisco passed resolutions calling attention to the fact that there is a hazard to infant and child life from the accidental aspiration of zinc stearate and urges that manufacturers shall place a cautionary label on the package.

### OLD STANDARD MEASURES STILL IN USE.

A brass yardstick and a pint cup sent by King George II of Great Britain to the Colony of Virginia in 1744 are still in use. They were recently tested by federal and city authorities and found to be correct.

### BE AN AIDE IN PUBLIC HEALTH SERVICE.

Pharmacists should encourage their patrons to get rid of the mosquitos before they become disseminators of disease. Their larvae are now showing life in pools of stagnant water and a film of oil will cause their destruction. Shady and dark places protect the mosquito.

### IN MEMORY OF PROFESSOR E. L. PATCH.

The March number of *Patchwork* is given over entirely to events in the life of the late Prof. E. L. Patch. The biographical sketch is quite complete and a number of illustrations are included which indicate the beautiful home life of the deceased. Several pages are given over to brief tributes by some of the friends of the deceased, resolutions of various organizations, and several poems written by him at different periods of his life.

Mrs. Clair A. Dye, wife of our fellow member, Dean of the University of Ohio School of Pharmacy, died April 21. Mrs. Dye was the daughter of the late Dr. and Mrs. W. T. Sinclair of Woodsfield, Ohio, and was married to Professor Dye June 30, 1903. The deceased attended quite a number of the annual meetings of the Association and was for a number of years a member of the Executive Committee of the Women's Section, A. Ph. A. She was a member of the University Women's Club, the Women's Pharmacy Club and the Daughters of the American Revolution, having served as librarian of the latter. The sympathy of the Association is expressed.

Frank W. Ekstrand of Salina, Kansas, a past president of the Kansas Pharmaceutical Association, died April 3, after a brief illness. By his death the Kansas Association has lost one of its most earnest and conscientious workers. At the time of his death he was a member of the Executive Committee of the State Association and had been engaged in the drug business in Salina for about thirty years.

Dr. E. F. Nichols of the Nela Research Laboratory died suddenly April 29 while reading a paper to the American Academy of Sciences on the occasion of the inauguration of its new building in Cleveland. The deceased was widely known because of his researches on "Light Pressures." He was formerly president of Dartmouth College and also for a time head of the Massachusetts Institute of Technology. During the war he served as research expert in the Navy Department. He was born in Leavenworth, Kansas, in 1869.

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## SOCIETIES AND COLLEGES.

### BUFFALO MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

The outstanding feature of the Buffalo Meeting of the American Pharmaceutical Association will be the report of the Headquarters Building and Campaign Committees, announcing the success of the undertaking to raise the required funds—it is a question of amount—success is assured.

However great the joy will be, there is work to do and the time is fast approaching when the officers of the sections will have to prepare their programs. For a list of officers see page X; address the chairman or secretary and send in the title of your paper; let it follow at a later day, if necessary.

The tentative program of the meeting will be found in this number of the JOURNAL under "Association Business." Study it carefully and make your plans for attendance; remember —at Buffalo during the week of August 25th.

## HEADQUARTERS BUILDING FUND CAMPAIGN AND THE NATIONAL ASSOCIATION BOARDS OF PHARMACY.

BY H. C. CHRISTENSEN, SECRETARY.

The campaign to raise funds for a Headquarters Building for all branches of American Pharmacy has reached a point where every branch of the great drug industry is seriously interested and giving loyal support. It is now well understood that the proposed AMERICAN PHARMACY BUILDING is to be a national building to serve all of the various drug and pharmaceutical organizations of the country.

The erection of a great building for pharmacy is a most laudable undertaking, but of far greater importance and benefit to pharmacy is the fact that the campaign is gradually but surely bringing about an affiliation or federation of all drug interests. Our present national associations are all necessary and essential. All are doing splendid work, and will further develop. The events of the last few months have clearly demonstrated that all branches of pharmacy fully realize the necessity, and are now willing and ready to join hands in work which will benefit all.

The more support we give to the Headquarters Campaign at this time, the closer we come to a real federation of American Pharmacy, to an effective consolidation of the drug interests in America. In order to affiliate, we must have something to affiliate around. This something is the Headquarters Building which we all want. With these thoughts in mind, the Executive Committee of the National Association of Boards of Pharmacy, at its recent meeting, voted unanimously to approve the Headquarters Campaign, and subscribed the sum of $1000.00.

At this time, we urge you if you have not already done so, to send in your subscription at once. This is a great opportunity for the combined power and influence of American Pharmacy to make itself felt for the benefit of all. Send your pledge card to your state chairman, or direct to this office. Over 1000 retail druggists have already subscribed from $100.00 to $1000.00 each. In Maryland, Minnesota, and Kansas each, retail druggists alone have raised $10,000. All subscriptions are payable in ten equal installments, over a term of five years. Do your part and we will put this over.

## NOTICE TO PHARMACEUTICAL RESEARCH WORKERS.

The annual meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION will be held at the Hotel Statler in Buffalo during the week of August 25, 1924.

The officers of the Association are planning for the biggest and best convention we have ever had.

Buffalo is so readily accessible to such a large majority of our members that a record attendance is assured.

Likewise, your officers of the Scientific Section are laying plans for bigger, better, more instructive and more interesting sessions than we have ever had before.

In order to do this, however, it is necessary that we have your coöperation and assistance. We are *depending upon you* for at least one paper upon any subject coming within the scope of our section.

To be assured a prominent place on the program send the secretary the title of your paper as soon as possible.

There is no limit as to the length of papers presented, but in order that all may have an *equal opportunity* to read their papers, your attention is called to the following abstract from the "By-Laws."

### SECTION IX.

Article III. Fifteen minutes shall be allowed for the reading of a paper. If the paper is too lengthy to be read in detail within this space of time, it shall be presented in abstract.

Article IV. The maximum time for the presentation of papers may be reduced at any session by a majority vote of the members present.

Article V. Each speaker in the discussion of a paper shall be allowed five minutes, but the total time permitted for the discussion of any one paper shall not exceed ten minutes.

Article VI. The maximum time for the discussion of papers may be reduced at any

session by a majority vote of the members present.

Article VII. The time allowed for presenting a paper or discussion may be extended by unanimous consent of those present.

Article VIII. All papers and reports presented to the Section become the property of the Association and shall be forwarded to the Editor of the JOURNAL immediately following the annual meeting, by the secretary of the Section.

The above rules will be strictly adhered to, therefore if your paper is too lengthy to be read in the time allotted, kindly be prepared to present it in abstract.

Owing to the large number of papers to be presented within a limited time, it will be impossible to include illustrated talks in the program of the Scientific Section.

Our Section will therefore no doubt introduce a new feature in the form of a "Special Evening of Illustrated Lectures," to which the general public will be invited. This arrangement will probably be more satisfactory to all parties concerned.

This ruling, however, does not preclude the use of lantern slides *to illustrate a scientific paper* so long as the paper can be presented within the allotted time.

We realize the fact that it is hard to "get busy" and write your paper before the "last horn blows" but note that THIS YEAR THE HORN IS GOING TO BLOW ON JULY 15TH.

In other words, all titles of papers, and an abstract (not over 250 words) of the same must be in the hands of the secretary by this date.

Papers received after July 15th cannot be assured of a place on the program and presentation can only be permitted as time may allow.

The program must be completed by this date in order to have it included in the JOURNAL the month before the meeting.

The value of our meetings depends as much, and sometimes more, upon the character of the discussions, as upon the papers themselves.

We are therefore asking each author this year to help us enhance the value of the discussion by

*First,* Suggesting someone to lead the discussion of his paper and furnishing this person with a copy of the paper sometime before the meeting.

*Second,* Furnish the secretary, before July 15th, with an abstract of 250 words or less, of each paper. The secretary will mimeograph these abstracts and forward them to several hundred of our "old standbys" in order that they can come to the meeting prepared to intelligently discuss the papers.

NOW "DO YOUR BIT."

1. Select your *Title.*
2. Write your *Paper.*
3. Make a short *Abstract.*
4. Select a *Discussion Leader.*
5. Send Title and Abstract to the secretary before July 15th.

After attending to the above you can come to Buffalo with "that Grand and Glorious Feeling" that you have done your share towards making *the Scientific Sessions a big success* and with the assurance that the officers will express to you their heartfelt appreciation of your valuable assistance.

P. S. PITTENGER, *Secretary,*
J. P. SNYDER, *Chairman.*

## SECTION ON PRACTICAL PHARMACY AND DISPENSING, A. PH. A.

Chairman Robert J. Ruth of the Section on Practical Pharmacy and Dispensing has sent out a letter soliciting additional papers for the Section and states that already a number of unusual papers and demonstrations have been received. The communication refers in brief to the Headquarters Building fund which the chairman feels will be over-subscribed.

## AMERICAN CHEMICAL SOCIETY MEETING.

The attendance at the Convention of the American Chemical Society in Washington during the week of April 21 exceeded expectations by far.

The program not only included addresses, lectures and papers of foremost men in science, but also an address by President Coolidge in which he expressed his estimate of the American chemist in these words—

"The American chemist has proved himself second to none in scientific knowledge under practical application. The World War brought vividly to our attention that our industrial chemistry had lagged behind that of Europe, but we are pleased to believe that this is no longer true. There are those who believe that Americans have not the patience to undertake the research work essential to develop new ideas in the chemical world, but the results emanating from American laboratories disprove this."

Professor R. A. Millikan, recently awarded the Nobel Prize for Physics, explained "The

Atom as Seen by the Physicist," and Professor Gilbert N. Lewis, this year's Willard Gibbs medalist, spoke on "The Atom as Seen by the Chemist."

The Division of Chemistry of Medicinal Products included among its contributors to the program—John J. Abel on "The Present State of Our Knowledge in Regard to the Chemistry and Function of the Pituitary Gland;" G. H. A. Clowes on "The Production and Use of Insulin," an illustrated lecture; E. C. White on "Organic Mercurials and Some Therapeutic Applications;" Atherton Seidell read a paper on "The Chemistry of the Vitamins."

The Society vigorously opposed the Cramton bill and approved the report of the committee on industrial alcohol as presented by Chairman Martin H. Ittner.

The fall meeting of the Society will be held at Cornell University, September 8–13.

## AMERICAN ELECTROCHEMICAL SOCIETY.

The American Electrochemical Society met in Philadelphia during the week of April 28. The nomenclature of the American Chemical Society was adopted. The subjects of greatest importance on the program related to dyes—the manufacture of intermediates, etc.

## AMERICAN DRUG MANUFACTURERS' ASSOCIATION.

The American Drug Manufacturers' Association convened in New York City April 7–10 at the Hotel Biltmore. The address of the president, Alfred S. Burdick, was comprehensive and dealt with every phase of activity that concerns the members of the Association. He reviewed the work of the committees and officers, commending the secretary and stressing the growing importance of the office and the wisdom of the location of the headquarters in Washington. He discussed with great detail the work of the sections.

Dr. H. A. B. Dunning presided over the Scientific Section. Among the subjects presented were the following: "The Solubilities of Synthetic Chemicals" by Jules Bebie, "Diluents and Excipients" by R. W. Proctor, "Drug Extracts" by J. P. Snyder, "Alkaloid and Drug Standards" by A. R. L. Dohme, "Digestive Ferments" by Frederick Fenger, and "Poison Labels" by Mortimer Bye.

The Crude Drug Section was presided over by Herbert R. McIlvaine and the Pharmaceutical Section by A. R. L. Dohme.

Interesting reports were made on price list simplification and bottle standardization. It was decided to discontinue all tablets in bottles of 500 and liquid products now sold in pounds are to be changed to pints. A Code of Ethics was adopted which proscribes the production of an imitation of a specialty offered by a competitor; to pass off the products of one manufacturer for those of another; to manufacture a private formula for a customer as an imitation of a specialty. Among the resolutions adopted the promotion of the American Pharmaceutical Association of a home for pharmacy was approved.

All the officers were reëlected. They are as follows: President, Dr. Alfred S. Burdick; Vice-Presidents, S. B. Penick, Willard Ohliger and Ralph R. Patch. Carson P. Frailey was reappointed secretary and Horace W. Bigelow, general counsel.

## UNITED MEDICINE MANUFACTURERS OF AMERICA.

The annual convention of the United Medicine Manufacturers of America was held in Washington April 8–11. E. A. Wilson of Boston was reëlected president and James F. Pickett of Washington, secretary. It was unanimously decided to move the headquarters of the organization from Chicago to Washington.

## AMERICAN MANUFACTURERS OF TOILET ARTICLES.

The annual convention of the American Manufacturers of Toilet Articles was held in New York City, April 22–24. The convention approved of the resolution instructing its executive committee to invite committees from the N. A. R. D. and the National Retail Dry Goods Association to a conference for the formulation of a Code of Business Ethics and to carefully consider the demonstrator problem to the mutual advantage of the three associations.

Resolutions were adopted opposing the Cramton Bill, endorsing the Mellon Tax Reduction Bill with its original provisions restored, and also the Design Registration Bill and the price protective bills now pending in Congress. All the officers of the Association were reëlected; they are: President, Gilbert Colgate; Vice-Presidents, Northam Warren and Edwin Sefton; Secretary-Treasurer, C. N. Baker. The following were elected to the Board of Directors: G. A. Pfeiffer, E. B. Hurlburt, J. A. Handy and William A. Bardley.

## WINDOW DISPLAY ADVERTISING ASSOCIATION.

The Window Display Advertising Association composed of national advertisers, manufacturers of advertising displays, retailers and trade papers was formed at Cleveland, March 17 and 18. The aim of the association is to promote the use of window and counter displays as a recognized advertising medium. It is stated that the association will make application to become a departmental part of the Associated Advertising Clubs of the World. Dr. Frank H. Peck of the Promotion and Publicity Department of E. R. Squibb and Sons was elected the first president of the association.

## AMERICAN PHARMACEUTICAL MANUFACTURERS' ASSOCIATION.

The American Pharmaceutical Manufacturers' Association will hold their annual meeting at French Lick, Springs, June 2–7. The officers of the association are: President, R. M. Cain, Indianapolis; Vice-Presidents, William H. Rorer, Philadelphia, and Don C. Westerfield of Dayton, Ohio; Secretary-Treasurer, Ralph R. Patch, Boston.

## AMERICAN SOCIETY OF NEWSPAPER EDITORS.

At the recent meeting of the American Society of Newspaper Editors at Atlantic City, "teeth" were put into the Code of Ethics of this society. This action may well be followed by other organizations. The society referred to was awake to the discredit brought upon certain members of their profession by the revelations in the course of the Teapot Dome investigation. A committee was appointed to examine the evidence adduced or obtainable as to journalistic participation in these scandalous actions and the directors of the society were instructed to apply disciplinary measures, even to the point of expulsion of any member found guilty. It would seem that this action of the American Society of Newspaper Editors and the very apparent sentiment in support of a higher standard of news selection would justify the conclusion that neither editorial venality nor ultra-sensationalism can longer find defenders among the leaders of that profession.

## DISTRICT OF COLUMBIA RETAIL DRUGGISTS' ASSOCIATION.

The Retail Druggists' Association of the District of Columbia met April 7 in the Hearst Building, home of the *Washington Times* and the *Washington Herald*. The entertainment of the evening was furnished by the Circulation Department of these papers. Paul Pearson was elected president, W. P. Herbst vice-president, W. H. Bradbury treasurer, and Norman D. Parker secretary.

## LOUISVILLE RETAIL DRUGGISTS' ASSOCIATION.

Louisville Retail Druggists' Association went on record as favoring the plan of the American Pharmaceutical Association to raise a fund for a Headquarters Building. It was voted to support the Simon N. Jones Scholarship, and to use every effort possible in securing the passage of a drug store ownership law in Kentucky. George Boeckman was elected president; the other officers are: Vice-President, Clarence Davis; Treasurer, Julius J. Ruhl; and Secretary, Robert J. Frick.

## OFFICERS BALTIMORE RETAIL DRUGGISTS' ASSOCIATION.

The following officers were elected for the ensuing year by the Baltimore Retail Druggists' Association April 14: President, R. E. Lee Williamson; Vice-Presidents, Charles Morgan, Charles Knight and J. A. Gerlach; Secretary, Melville Strasburger; Treasurer, P. J. Boenning.

## MISSISSIPPI BOARD OF PHARMACY.

The recently appointed Mississippi Board of Pharmacy was organized by electing Thomas E. Goodman of New Albany president, Charles E. Wilson of Corinth vice-president, and Miss Lela M. Burnett of Jackson secretary-treasurer. The other members of the Board are F. W. Duckworth, Boonville, and Jeff Harpole, Philadelphia. A new departure at the meeting was the creation of Director of Publicity; Charles E. Wilson was elected. He is a graduate of the University of Maryland.

The School of Pharmacy, University of Mississippi, has now extended its course to three and four years. The schedule of hours for the subjects taught in these courses has been arranged.

## TEXAS PHARMACEUTICAL ASSOCIATION.

Bulletin No. 4, of the Texas Pharmaceutical Association, of which Walter D. Adams is the Secretary-Editor, is largely devoted to the next annual meeting of the Association to be held at the State Capitol. A feature of the

convention will be the Drug Show. Announcement is made in the Bulletin of the campaign for funds for the American Pharmaceutical Association Headquarters Building. The *Southern Pharmaceutical Journal* comments editorially on a proposed pharmacy building for the Texas State University as a tribute to Dr. R. R. D. Cline who has been dean of the pharmacy department for many years.

### KANSAS PHARMACEUTICAL ASSOCIATION.

Kansas Pharmaceutical Association has just completed its annual convention at Topeka. A feature of the convention was the Drug Show held in the Capitol Building where the more important sessions of the association were also held. The *Sun Flower Druggist* heartily endorses the Headquarters Building Campaign.

### LOUISIANA PHARMACEUTICAL ASSOCIATION.

The Louisiana Pharmaceutical Association which will convene at Shreveport next week has provided an interesting program. Among the legislative matters that will be discussed are the consideration of drug store ownership, and graduation prerequisite as a requirement for Board of Pharmacy examinations.

### ARIZONA PHARMACEUTICAL ASSOCIATION.

President A. G. Crouch and Secretary Arthur G. Hulett have issued a communication to the members of the Arizona Association and also druggists who are not members advising them of the mission of the Association, and also calling attention to important matters which concern their business affairs. The movement to establish a Pharmacy Headquarters Building by the American Pharmaceutical Association is endorsed.

### BRONX COUNTY PHARMACEUTICAL ASSOCIATION.

The Bronx County Pharmaceutical Association has just issued its official Year Book of 64 pages which contains a number of most interesting articles dealing with live questions of the day. The articles are well selected and relate to various subjects; among these, the Headquarters Building campaign now being carried on by the American Pharmaceutical Association is highly endorsed. The book reflects credit on the editors and publishers. The interests of the New York Academy of Pharmacy are being promoted by the association.

### NATIONAL ASSOCIATION OF DRUG CLERKS.

The National Association of Drug Clerks will meet in annual session at Palmyra, Wisconsin, June 17–19. The Druggists' National Home which this organization is endowing is located here on Spring Lake and offers accommodations for many who will attend the convention. The fund for the building and its endowment is growing.

### VIRGINIA PHARMACEUTICAL ASSOCIATION LEGISLATION.

The pharmacists of Virginia were successful in strengthening their pharmacy law. An amendment prevents the display of such words as pharmacy, drug store, etc., if the store is not under the personal supervision of a registered pharmacist. The terms "pharmacy," "original package," "patent and proprietary medicines" are defined and the pharmacy prerequisite law of 1918 is reënacted.

### SCHOOL OF PHARMACY, OREGON AGRICULTURAL COLLEGE.

The students and faculty of the School of Pharmacy, O. A. C., recently put on a drug show in connection with a College Educational Exposition. The purpose of the drug show was to educate the public and give the students a training in acquainting the public with their professional work and in selling merchandise by thorough acquaintance with it. So well did the plan impress the public that this will be made an annual event.

The students in charge were trained at the school in the methods to be pursued in giving information to the public. For experimental purposes the show was arranged into two departments—of "live exhibits" and "still exhibits." The former explained Soxhlet extraction, distillation, manufacture of pills, tablets, etc.; the latter comprised merchandise ready for display and sale. Dean Ziefle reports—if the evidence of interest of the public was greater for one than the other it was in the "live exhibit." The pharmaceuticals, sundries, etc., supplied by wholesalers and manufacturers were displayed and explained with a purpose to acquaint the public with the need of them, the care, value, etc. Thirty or more exhibits formed part of the show and most of them included a number of items.

### COLLEGE OF PHARMACY, UNIVERSITY OF SOUTHERN CALIFORNIA.

Plans for the immediate erection of the first unit of the science project of the University

of Southern California have been completed and the importance of pharmacy is recognized by the inclusion of the pharmacy building in this first unit.

### PHILADELPHIA COLLEGE OF PHARMACY AND SCIENCE.

The incoming class of the Philadelphia College of Pharmacy and Science will be the last class to be enrolled for a 2-year course in pharmacy.

The P. C. P. Track Team won second place in the Intercity Collegiate track meet and the team is now getting ready for the great event of the Spring Field Sports at the Franklin Field.

We are indebted to Dr. Arno Viehoever for an autographed copy of "Oh, Alma Mater," written by Dean J. W. Sturmer and set to music by the former.

### PITTSBURGH COLLEGE OF PHARMACY CONTRIBUTES TO A. PH. A. HEADQUARTERS FUND.

The faculty and student-body of Pittsburgh College of Pharmacy have subscribed $3750 to the A. Ph. A. Headquarters Building fund.

### MANILA COLLEGE OF PHARMACY ANNUAL.

The "Manila College of Pharmacy Annual," a book of more than 150 pages, is dedicated to the Faculty by the Class of 1923. Photographs of Dean Alfredo Guerrero and Prof. Filemon Tanchoco introduce the faculty of twelve members, of whom excellent halftones are shown and also of Dr. Alejandro Albert, under-secretary of Public Instruction, founder of the Manila College of Pharmacy. Pictures of the students, singly and in groups, and also of the various departments of this institution, illustrate the interesting volume. The reading pages give an historical account and current events of the college, curriculum, etc.; the editors and artists have exhibited their fitness for the work assigned them, and it is pleasing to note the humor of the cartoonist, who thereby confirms American relationship.

### MORTAR AND PESTLE SOCIETY, FLORIDA SCHOOL OF PHARMACY.

Subjects for the program of April 11 of the Mortar and Pestle Society of Florida School of Pharmacy included the following: "Decolorized Tincture of Iodine" by R. A. Jones; "Waterglass" by S. N. Work; "Chemistry of Digitalis" by J. A. Gardner.

Quite a sum of money was subscribed by the Society for the A. Ph. A. Headquarters Fund.

### NEBRASKA UNIVERSITY HAS TRADE BULLETINS.

The college of business administration of the University of Nebraska is now giving direct service to the business interests of the state; eight bulletins have been issued recently giving a survey of different lines in display, showing average turnover, average profits, average capital invested per unit of gross sales, and cost of marketing.

Four members of faculty are devoting their time to supplying business information to the commercial interests.

### IMPORTANT CHANGES IN SCHOOL COURSES OF CHEMISTRY.

Prof. Neil E. Gordon of the University of Maryland presented a report before the American Chemical Society on the high school courses as far as they relate to chemistry. A new outline of high school chemistry is being brought to the attention of the teachers and a proposed uniform college course and plans for a national organization to deal with chemical education are being worked out.

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## THE PHARMACIST AND THE LAW.

### ANOTHER PRICE MAINTENANCE MEASURE.

The Williams Bill provides for price maintenance and is entitled *A BILL:* To protect the public against the use of deceptive and injurious practices in the marketing of articles of standard quality under a distinguishing trade mark, name or brand.

*Be it enacted* by the Senate and House of Representatives of the United States of America in Congress assembled, That in a contract for the sale of an article of merchandise of standard quality, under a distinguishing trade mark, name or brand, to a dealer, wholesale or retail, hereinafter referred to as the "vendee," by a manufacturer or other owner thereof, hereinafter referred to as the "vendor," it shall be lawful for such vendor, if the contract constitute a transaction in interstate commerce or in any district or territory subject to the

jurisdiction of the United States, to prescribe a uniform price and uniform terms of settlement for the resale of such article, Provided, that (*a*) such vendor shall not have a monopoly or control of the production of or the market for such or any other article, in violation of the act of Congress of July 2, 1890, or any of the acts supplemental thereto; (*b*) such vendor shall not be a party to any agreement, combination or understanding with any of his competitors in the production and sale of such or any other article, with respect to the price at or the terms upon which it shall be sold or resold to the public, in violation of any of said anti-trust acts; (*c*) such vendor shall negotiate and effect such contract with each vendee, separately, in the course of a private business; (*d*) such contract shall be subject to reasonable exception; and (*e*) such contract shall not relate to a sale to the United States or any political subdivision thereof, or to a public institution, or to any society or institution established solely for religious, philosophical, educational, medical, scientific, philanthropic, or literary purposes.

## UNIFORMITY IN STATE LAWS AND CONFORMITY WITH FEDERAL ENACTMENTS.

President Coolidge in a recent address said: "If we are to maintain the nation and its government—institutions with a fair semblance of the principles on which they are founded, two policies must always be supported: First, the principle of local self-government in harmony with the needs of each state. This means that in general the states should not surrender, but retain their own sovereignty and keep control of their own government. Second, the policy of local reflection of nation-wide public opinion. Each state must shape its course to conform to the generally accepted sanctions of society and of the needs of the nation. This policy is already well recognized in the association of the states for the promotion and adoption of uniform laws. Unless this policy be adopted by the states, interference by the nation cannot be resisted."

## ETHICAL CANONS FOR BUSINESS.

At the meeting of the National Chamber of Commerce in Cleveland a committee recommended the adoption of a Code of Ethics to govern the every-day trade transactions of the business world. One of the canons in this proposed code sets forth that a business should so conduct itself as to render restrictive legislation unnecessary. However much this may be desirable, it is hardly probable that such a condition in legislative affairs will very soon come about. Legislators would very likely resent being deprived of the opportunity of making laws however unnecessary they may be.

## SECRETARY HOOVER AND TRADE ASSOCIATIONS.

Secretary of Commerce Hoover has invariably shown his interest in business associations and the policies of his department along these lines have been constructive. In a recent message to a convention he said: "I hope you will have opportunity to express my faith in the great national values of constructive trade association work. I can see no other method of organization in industry by which many of the problems of common interest—which at the same time have their public implications in greater stability to business, greater economies in production and distribution, greater conservation of our national resources and improved skill and business ethics—can be accomplished except by such organization."

## REVISED REGULATIONS NO. 60.

Revised Regulations No. 60 for the enforcement of the National Prohibition Act became effective May 1. This is the first revision of these regulations since January 17, 1920, when the National Prohibition Act was put into effect. Many changes have been made and it behooves every pharmacist to study them carefully. Everyone holding a permit under the Prohibition Act should receive a copy and they can be had from the nearest revenue officer.

The importance of knowing what a pharmacist may or may not do in dispensing alcoholics cannot be too strongly impressed. The laity should be convinced of the necessity of close observation over those who are charged with the duties of enforcement as well as those who accept the responsibility of dispensing—alcoholics for internal use, and some others as well, are medicinal products and only a pharmacist should dispense them—drug stores and pharmacies should be in charge of and owned by pharmacists and those who wilfully violate the trust reposed in them should be denied the right and honor to practice pharmacy.

## INDIANA LAW PROHIBITS THE MISUSE OF PROPER DRUG STORE TITLES.

A section of the Indiana law reads: *Drug Store, Pharmacy, Apothecary, Use of Terms.*

*Section 1.* That it shall be unlawful for any person who is not legally licensed as a registered pharmacist by the Indiana Board of Pharmacy, or any person, firm, or corporation who does not have in his or its continuous employ, at each place of business, a duly registered and licensed pharmacist, licensed by the Indiana Board of Pharmacy, to take, use or exhibit the title "drug store," "pharmacy," or "apothecary," or any combination of such titles, or any title or description of like import, or any other term designated to take the place of such title.

### POSSIBILITY OF CONGRESS INCREASING THE POSTAL RATES.

An increase in postal rates, whether of parcel post or second class, affects everyone. Various bills in Congress contemplate an advance in postal rates and readers should inform themselves on the subject by sending for H. R. 6650 introduced by Representative Calvin D. Paige of Massachusetts to readjust the postage rates on ordinary, insured and C. O. D. domestic parcel post matter; also H. R. 8437 introduced by Representative N. Clyde Kelly of Pennsylvania for the consolidation of third and fourth class mail and prescribing rates therefor. The proposed increase in second class rates will add to the cost of every periodical, large or small, as it would be levied principally on the nearby zones. Unless the public generally will take an interest in this matter and express opposition there will certainly be an advance in postage rates, notwithstanding the fact that Postmaster-General New advocates no change in the rates until a report from his department conducting investigations into costs with the object of making readjustments in postal charges on a scientific basis has been completed. The recommendation of the Postmaster-General is commended and readers are urged to write to their Congressional and Senatorial representatives protesting against hasty legislation which would nullify work of the committee referred to and prevent a scientific adjustment of rates.

### CONTEMPLATED HEROINE PROHIBITION.

H. R. 7079 seeks to prohibit the importations of crude opium for the manufacture of heroine. There has been no concerted opposition to the bill. Members of the medical profession have testified to the effect that heroine is the most dangerous of all habit-forming drugs and for that reason its manufacture and distribution should be prohibited. Most pharmacists hold that it is altogether a question to be decided by the medical profession; the greater number of physicians, if not all, agree that there would be no handicap because of the prohibition of its manufacture.

## BOOK NOTICES AND REVIEWS.

*Neues Pharmazeutisches Manual* von Eugen Dieterich. 14. verbesserte und erweiterte Auflage. Herausgegeben von Dr. Wilhelm Kirkhof, ehemal Director der Chemischen Fabrik Helfenberg. Mit 156 Textabbildungen-Lexicon. 825 pp. Cloth, $5.00. Berlin, Verlag von Julius Springer. 1924.

In the realm of pharmacy in Germany, in fact throughout the world, two names stand out prominently, Hager and Dieterich. Dr. Hermann Hager, the zealous apothecary, the founder of the Pharmazeutische Zentralhalle, was a literary genius and his two master works, "Pharmazeutische Praxis" and "Pharmazeutisch-Technisches Manuale," remain an everlasting monument to him. Eugen Dieterich, the apothecary and pharmaceutical chemist, became the founder of manufacturing pharmacy in 1869 through his establishment in Helfenberg, Saxony, and enriched pharmaceutical literature by his "Pharmazeutische Manual," the first edition of which was published in 1887. What a real success this work was can be seen from the fact that the first edition was completely exhausted within 6 months and that 5 editions were published during the first 5 years. Up to his death in 1904 Eugen Dieterich published 9 editions of his Manual. He was succeeded by his son, Professor Dr. Karl Dieterich, who up to his death in 1920 published 4 editions, a total of 13 editions by Dieterich, *pater et filius*.

The present, 14th edition, just published was revised by Dr. Wilhelm Kirkhof, former director of the Helfenberg establishment, who in the preface acknowledges his thanks to Dr. H. Mix, chemist of the same firm, for his collaboration. The book is so known throughout pharmacy of the entire world that it needs no further introduction nor comments. For the benefit of American pharmacists permit me to point out its following advantages:

1. Alphabetic Arrangement. This also includes the various processes used in pharmacy.

The first monograph treats *Abdampfen, i. e.*, Evaporation, a monograph, together with 7 illustrations of which any textbook on pharmacy can be proud.

2. The 2 Column Arrangement helps to condense the book and saves a great deal of space in the publication of formulas, which are thus much easier read.

3. Thoroughness and Completeness. The proverbial German thoroughness and completeness can again be observed in this work. The chapter on "Tabulettae Friabiles" gives credit to American Pharmacy for its origin. The chapter "Tierarzneimittel or Veterinaria" comprises 26 double column pages and gives prescriptions for different ailments of the horse, cow, sheep, pig and dog.

4. Varieties of Formulas. Not only are the formulas of the different pharmacopœias and formularies given, but formulas for practically everything needed or sold in a pharmacy are included, from straw hat bleaches and shampoos down to foot powder and corn remedies. We trust that the Prohibition Department will not prevent the importation of the work owing to the formulas given for Spiritus Frumenti artificialis and Spiritus Vini Gallici artificialis.

5. Directions for the Use of Preparations. In many instances explicit directions are given how to use the different medicinal and also technical preparations, a great help in the printing of the labels.

6. Comparison of Formulas. Although Dieterich emphasizes the preparations of the German and Austrian Pharmacopœias and Formularies, those of other countries as Switzerland, Great Britain, France and the United States are quoted, especially when they differ materially or produce a superior product. Under "Acetum" the strength is given as follows: 6% Germ., Aust., U. S., Russ.; 4.27% Br., 4.7% Dan.; 5% Swed., Helv., and 7–8% Fr. Under Spiritus Lavendulæ the U. S. P. formula is given both by volume and weight.

7. The 156 illustrations, mostly splendid reproductions of apparatus, greatly help to elucidate the text and are an excellent feature of the work.

8. A List of firms, manufacturers of pharmaceutical apparatus and specialties is also included.

9. Termini Technici. A list of 18 pages, 3 columns each, gives the technical, medical and pharmaceutical names in German, Latin, French and English.

10. Index. A very complete and unusually detailed index, comprising 86 pages in 4 columns each, conclude the work.

These ten features alone, besides many others, make the book a master work. The 14th edition, as its predecessors, contains in a condensed form a great quantity of pharmaceutical information, spread throughout various pharmacopœias and formularies and the periodical literature, information of great value to the practical pharmacist, the pharmaceutical manufacturer and chemist, the teacher and the student. The publisher deserves also credit for the excellent paper, printing and binding which greatly prolongs the life of such a book which is much used and even misused.

There is no question that "Dieterich's Neues Pharmazeutisches Manual" should form an indispensable member of the libraries of all pharmaceutical laboratories and all pharmaceutical colleges. Above all it should be in the hands of retail pharmacists, who love their profession and wish to advance same. Such was the wish of its originator, Eugen Dieterich!

O. R.

*Ductless and Other Glands.* A Popular Account of Their Nature and Functions. By Fred E. Wynne, B.A., M.B., D.P.H., etc. Medical Officer of Health, Sheffield; Professor of Public Health, Sheffield University; Late Hon. Pathologist Royal Infirmary, etc. 12 mo. 153 pp. Cloth, $1.50. Alfred A. Knopf, New York City.

In the old days of the apothecary and the physician an excathedra statement by the latter was sufficient to convince. Luckily, this has been changed long ago. Modern medicine as well as pharmacy is now based on scientific principles. Some of the most important physiological and clinical researches of recent years has been the study of the functions of what are called "Ductless Glands" and the allied activities of other glands which, though not ductless, are believed to have a secondary and important function through their "internal secretions."

The subjects dealt with are: Glands and Secretions, Nutrition, Development and Growth, Thyroid Gland, Parathyroids and Thymus, Suprarenal Glands, Pituitary Body, Pineal Gland, Other Ductless Glands, Internal Secretions and Organs and Therapy. The book, although intended for the general public, is also very useful to pharmacists and physicians, as in its condensed form it will refresh the memories of members of both professions who have but little leisure from the cares of a busy practice.

OTTO RAUBENHEIMER, PH.M.